U.S. Coast Guard

Aviation Safety Annual Report

Fiscal Year 2013

Aviation Safety Division (CG-1131)

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Message from Ancient Albatross #23

On August 23, 1919, LTjg Elmer F. Stone received the following citation from then Secretary of the Navy, Franklin D. Roosevelt:

"The energy, efficiency, and courage shown by you contributed to the accomplishment of the first trans-Atlantic flight, which feat has brought honor to the American Navy and the entire American nation."

For nearly a century, Coast Guard aviation professionals have brought honor to our calling. The energy, efficiency, and courage demonstrated by Elmer Stone are part of our fabric, identity, and culture.

It takes those same attributes to sustain safety as a centerpiece of Coast Guard aviation. In fact, our culture of safety allows us to accomplish remarkable feats, using disciplined initiative, while maintaining the highest safety profile of the armed services. Our flight safety program generates lessons learned through the mishap reporting process, but we also foster open and informal learning by openly discussing our mistakes on the hangar deck and in the wardroom. The majority of errors and failures in Coast Guard aviation are unintentional. We become more proficient operators by exerting the necessary energy and demonstrating the courage to discuss these situations and learn from them in open fora. We greatly enhance our culture of safety and build mutual trust when peers, mentors, and leaders discuss problems and coach at-risk behavior.

We are a learning culture focused on our craft. For nearly 38 years I have been proud to stand in the ranks of the many Coast Guard aviation professionals who demonstrate courage in safely accomplishing our missions with the same spirit of energy and efficiency as did Elmer Stone!

Semper Paratus!

J. P. Currier
Vice Admiral U.S. Coast Guard
Vice Commandant

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Message from the Chief of Aviation Safety

Our mission is to ensure safe and effective operations with a guiding vision of leadership toward a proactive safety culture. We provide consulting expertise, develop innovative systems and processes, create and implement analytical tools, and sustain a community of engaged safety leaders.

Why champion ***safety and leadership ~ salus et ducendi*** as our program brand and identity?

I believe strongly in the tenet of leadership to anchor us. We can design a model safety management framework, but human participants in the system exhibit varied performance. Outcomes are shaped by behavior and choices stemming from our organizational culture reflecting our shared beliefs and habits. With the intent to learn, we must remain steadfast in our diligence to manage risk and perform our duty with distinction, selflessness, and devotion.

Improving our safety culture is hard work. We seek to transform individual habits and refine our belief system. Exercise passion, persistence, and grit. In doing so, we emulate the courage of Elmer Stone, the memory of lost shipmates, our heritage and chosen profession. This is part of a job that matters! Together, we form an elite legacy of the best aviators in the world. Be proud.

Discover your own identity and role. Choose leadership as a practice to make a difference. Everyone is a leader in the safety program!

Safe by Design ~ Leaders by Choice

With Best Regards,

CAPT Mitchell Morrison

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State of Coast Guard Aviation Safety

During Fiscal Year 2013, our Coast Guard (CG) aviation fleet logged over 108,000 flight hours with zero Class A Mishaps, one Class B mishap, 37 Class C mishaps, 472 Class D mishaps, and 59 Class E mishaps. We provide a comprehensive summary of aviation mishaps by number and rate, differentiated by class, operational mode and airframe in the next section. We experienced a marked increase in reported Class C, D, and E mishaps in FY13. The significant uptick in Class D mishap reporting is a very strong indicator of improving our culture of learning and transparency through reporting.

Let us all learn from these reports and use them as a primer to share professional aviation knowledge and proactively guard against repeat loss. We ask that all units continue to take the time to carefully analyze causal factors and report successful risk mitigation strategies and lessons learned. Let's challenge our colleagues and elevate our safety culture through incorporation of your thoughtful recommendations and calls to action. This year's report contains more information than some prior years. We hope you find value in the information provided and welcome your constructive feedback to improve our fleet reporting.

Aviation Mishap Summaries

Aviation mishaps are categorized by class and type according to the *Safety and Environmental Health Manual*, COMDTINST M5100.47 and the latest *Revision to Mishap Cost Thresholds and Notification Requirement* summarized in ALCOAST 590/10 (R 151314Z DEC 10). A summary of reporting requirements is provided in *Table 1: Aviation Mishap Class Severity Thresholds* for reference.

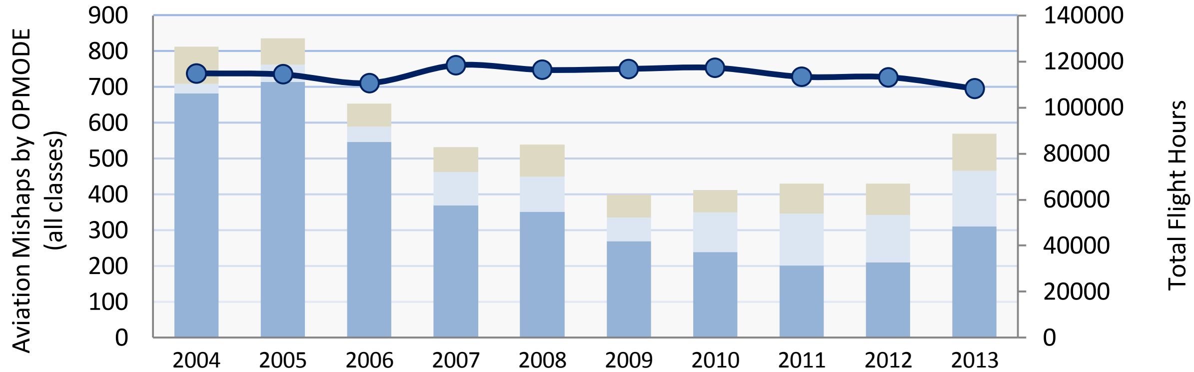
Table 1: Aviation Mishap Class Severity Thresholds

Class	Personnel	Assets
A	Fatality; permanent total disability; missing or missing in action	• Reportable property damage ≥ $2M • Acft missing, abandoned, beyond economical repair • Midair collision
B	Permanent partial disability; 3+ personnel inpatient hospitalized	$500,000 ≤ reportable property damage < $2M
C	Lost work time beyond event day or shift; any person w/ ≥ 30 days on limited duty or restricted status; transfer of individual to different job	$50,000 ≤ reportable property damage < $499,999
D	Require more than simple first aid but not Class C criteria; any person w/ < 30 days on limited duty or restricted status	• $0 ≤ reportable property damage < $49,999 • Accidental firearm discharge, electrical shock, fire not meeting higher criteria • Near midair collision; near miss; high potential event • Other flight related mishaps IAW COMDTINST M5100.47 Section 3.4.F
E	Not applicable	Engine damage only regardless of cost

CG and other military mishap rates are traditionally illustrated to reflect the number of mishaps that occur every 100,000 flight hours. For consistency, all mishap rates provided in this annual report reflect the events per 100,000 flight hour ratio. Since CG aviation assets commonly log between 108,000 – 119,000 annual flight hours, the resulting flight mishap rates in this report are nearly equal to the number of flight mishap events in each Class during a given year.

Mishap Operational Mode Summary

A summary of mishaps by Operational Mode (OPMODE) is provided below in *Figure 1: Aviation Mishaps by OPMODE (FY 2004-2013)*. The chart illustrates all aircraft mishaps and all flight time recorded for each year. Additional summaries are included in the rotary and wing fixed wing sections of this report.

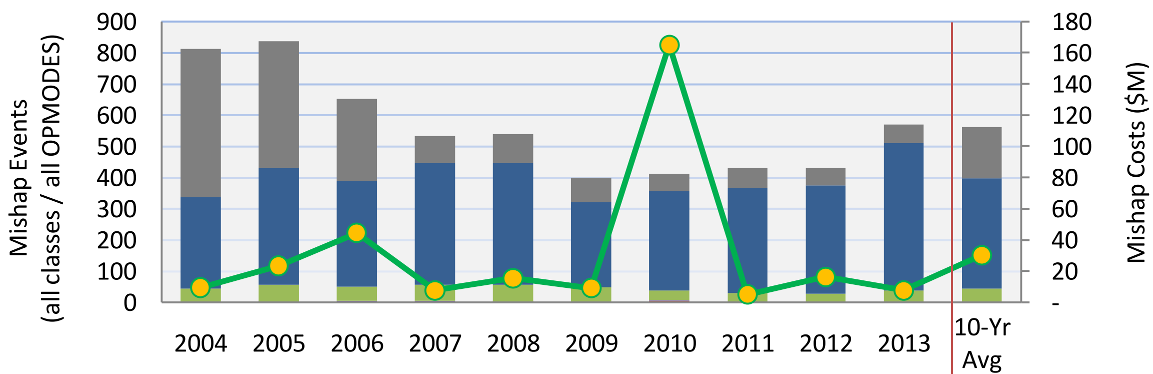


	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ground	103	74	64	70	88	64	62	85	87	103
Flt-Rel	27	47	42	94	99	66	111	144	133	156
Flight	683	715	547	369	352	270	239	202	210	310
Flt Hrs	114873	114387	110637	118417	116361	116793	117269	113363	113222	108239

Figure 1: Aviation Mishaps by OPMODE (FY 2004-2013)

Mishap Class Summary

A summary of all aviation mishaps by class and cost is provided below in *Figure 2: Aviation Mishaps by Class and Costs (FY 2004-2013;* all OPMODES).



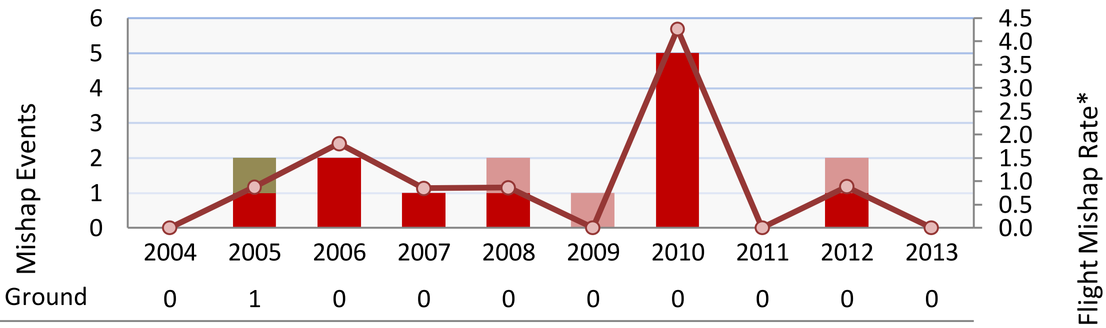
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	10-Yr Avg
E	475	405	264	87	93	78	56	65	55	59	163.7
D	295	374	339	390	390	274	319	336	347	472	353.6
C	43	54	46	52	53	45	30	29	26	37	41.5
B	0	1	2	3	1	2	2	1	0	1	1.3
A	0	2	2	1	2	1	5	0	2	0	1.5
Cost ($M)	9.39	23.35	44.44	7.68	15.38	9.04	164.9	5.03	16.20	7.65	30.31

Figure 2: Aviation Mishaps by Class and Costs (FY 2004-2013; all OPMODES)

Mishap Class and OPMODE Breakdown

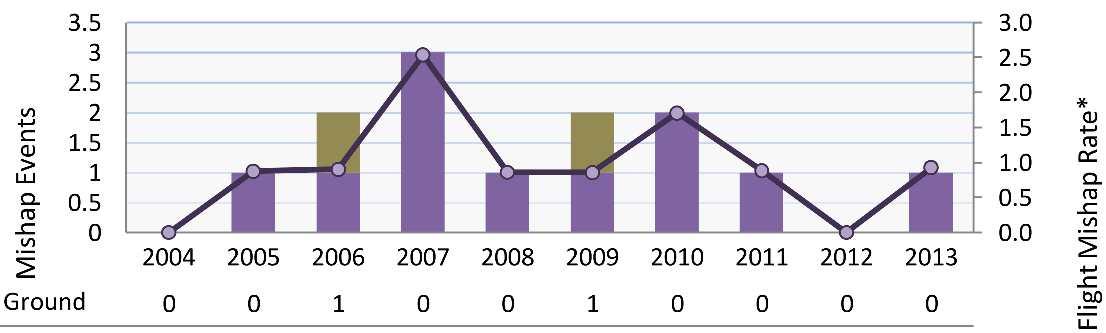
A fleetwide summary of each class of mishap is provided in this section. Each chart and data table illustrates the total number of all aviation mishap events for a given class and OPMODE (i.e., Flight, Flight Related (Flt-Rel), and Ground). The number of mishap events is shown on the left (primary) axis with a corresponding mishap rate on the right (secondary) axis. The mishap rate is based solely in the total number of flight mishaps in a given year (e.g., flight related and ground mishaps are excluded).

* Note: Mishap rates depicted in each figure reflect the number of Flight mishaps that occurred every 100,000 flight hours in a given class. Flt-Rel and Ground mishaps are excluded from mishap rate calculations.



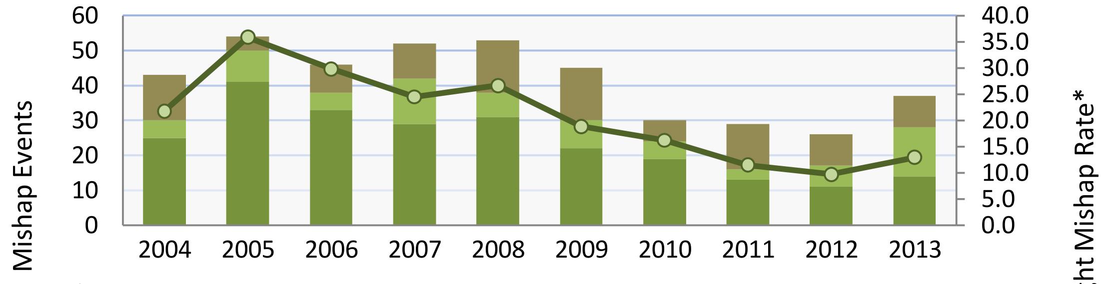
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
A Ground	0	1	0	0	0	0	0	0	0	0
A Flt-Rel	0	0	0	0	1	1	0	0	1	0
A Flight	0	1	2	1	1	0	5	0	1	0
A Flight Rate	0.00	0.87	1.81	0.84	0.86	0.00	4.26	0.00	0.88	0.00

Figure 3: Class A Mishaps (FY 2004-2013)



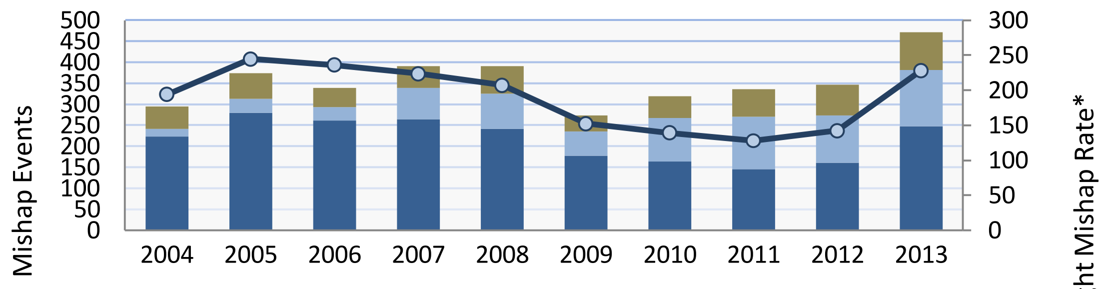
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
B Ground	0	0	1	0	0	1	0	0	0	0
B Flt-Rel	0	0	0	0	0	0	0	0	0	0
B Flight	0	1	1	3	1	1	2	1	0	1
B Flight Rate	0.00	0.87	0.90	2.53	0.86	0.86	1.71	0.88	0.00	0.92

Figure 4: Class B Mishaps (FY 2004-2013)



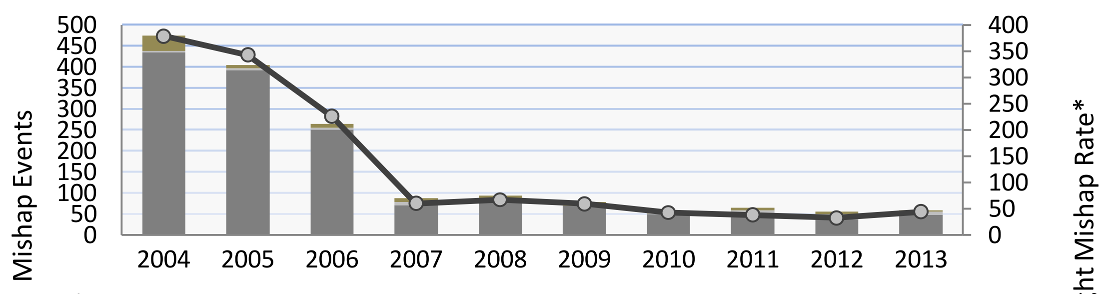
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
C Ground	13	4	8	10	15	15	6	13	9	9
C Flt-Rel	5	9	5	13	7	8	5	3	6	14
C Flight	25	41	33	29	31	22	19	13	11	14
C Flight Rate	21.8	35.8	29.8	24.5	26.6	18.8	16.2	11.5	9.7	12.9

Figure 5: Class C Mishaps (FY 2004-2013)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
D Ground	53	61	46	51	65	39	51	66	73	91
D Flt-Rel	19	33	32	74	84	57	105	125	113	134
D Flight	223	280	261	265	241	178	163	145	161	247
D Flight Rate	194	245	236	224	207	152	139	128	142	228

Figure 6: Class D Mishaps (FY 2004-2013)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
E Ground	37	8	9	9	8	9	5	6	5	3
E Flt-Rel	3	5	5	7	7	0	1	16	13	8
E Flight	435	392	250	71	78	69	50	43	37	48
E Flight Rate	379	343	226	60	67	59	43	38	33	44

Figure 7: Class E Mishaps (FY 2004-2013)

Auxiliary Aviation Mishap Summary

The following figure and table summarize the last five years of reported Auxiliary Aviation mishaps and associated costs.

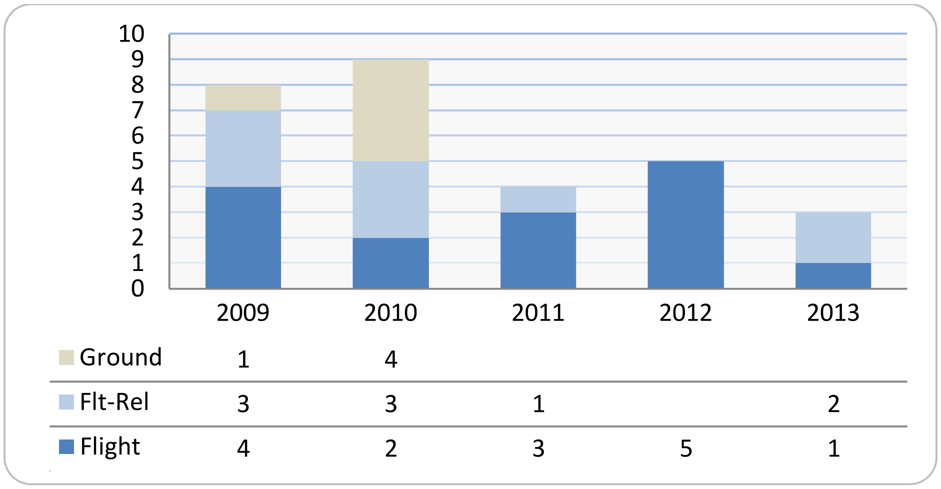


Figure 8: Auxiliary Aviation Mishaps by OPMODE

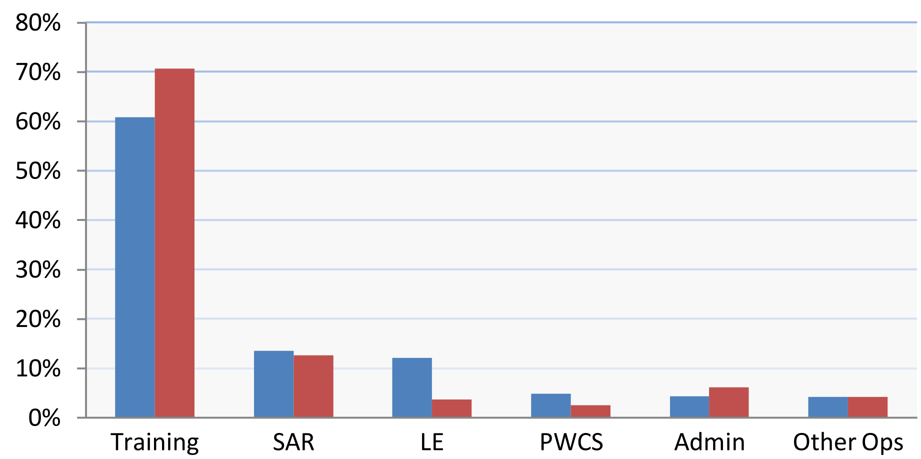
Table 2: Auxiliary Aviation Mishaps (FY 2009-2013; all OPMODES)

Year	Class	Mishaps	Injuries	Direct Cost
2009	C	3	1	128,193
	D	2	1	-
	E	3	0	1,220
2010	D	8	2	21,275
	E	1	0	40,000
2011	D	3	0	14,287
	E	1	0	-
2012	C	1	0	34,929
	D	2	0	-
	E	2	0	6,903
2013	D	3	0	260
	Total	**29**	**4**	**247,066**

Rotary Wing Mishap Summary

This section summarizes cross-cutting topics of interest to the rotary-wing community. Please refer to the platform-specific sections and the 2013 Aviation FSO's *Flight Plan* at the end of this report for additional relevant information.

Review of the data in *Figure 9: Rotary Wing Flight Hour and Mishap Percentage by Mission (FY13)* reveals a higher ratio of mishaps compared to resource hours when conducting training and administrative missions. Similar operational employment codes that comprise fewer than 5% of resource hours were consolidated in this illustration. *Admin* includes flight hours and mishaps linked to Test, Ferry and Admin flights. *Other Ops* includes flight hours and mishaps linked to Aids to Navigation, Coop, Defense Readiness, Ice Operations, Marine Environmental Protection, Marine Safety, Marine Science Activities, and Miscellaneous.



	Training	SAR	LE	PWCS	Admin	Other Ops
Flt Hr Percentage	61%	14%	12%	5%	4%	4%
Mishap Percentage	71%	13%	4%	3%	6%	4%

Figure 9: Rotary Wing Flight Hour and Mishap Percentage by Mission (FY13)

Training Requirements

The February 2013 release of COMDTINST M3710.1G affected rotary-wing operations in 2013, with changes to Chapter 8 – *Flight Crew Member Designations, Qualifications, and Training*, being the most noteworthy. The addition of new training requirements created a ripple effect affecting the need for changes to ALMIS and both rotary-wing flight manuals (e.g., addition of departure briefs to instrument takeoff procedure). Also of note, the annual requirement for aviation physiology training now specifically applies to rotary-wing fliers.

Helicopter Operational Safety Summit Team Activity

ALCOAST 133/13 – *Implementation of Hand Signals for Hoist Operations into the Rotary Wing Flight Manuals and Boat Crew Seamanship Manual*, released in March 2013, represented a significant milestone. FORCECOM's Training Division (FC-T) led the collaborative effort to develop standardized hand signals to ensure more rapid means of on-scene communication between boat crews and aircrews. ATC Mobile, CG-711 (Office of Aviation Forces), and CG-731 (Office of Boat Forces) supported this effort as charter members of the Helicopter Operational Safety Summit Team (HOSST) since 2009. Some final

HOSST activities are in the works to formalize the structure and content of the equipment/tactics familiarization meetings between boat stations and air stations.

Hoist-Related Mishaps

In FY13, hoist-related mishaps hit their highest total in 10 years. Particularly interesting is that 17 total hoist shear events marked the most of these events recorded since 2000. Hoist-related mishap data shown in *Figure 10: RW Hoist Foul/Shear Event Summary* and *Figure 11: Hoist-related RS Injury/Shear Events* includes hoist shears, snags, and injuries incurred during both boat and/or rescue swimmer hoist operations. In FY13, 23 of 26 hoist mishaps took place during training missions. Three other mishaps resulted in non-serious RS injuries.

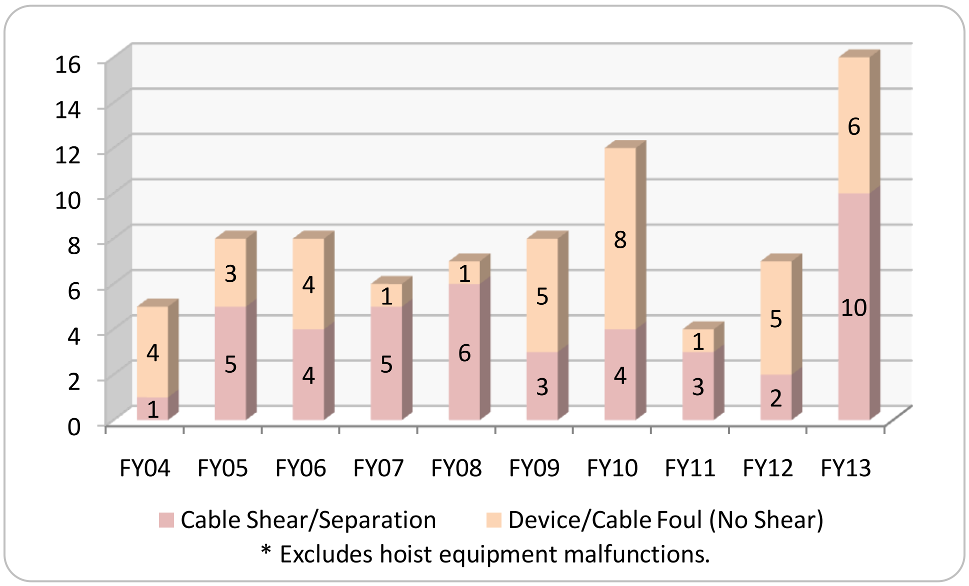


Figure 10: RW Hoist Foul/Shear Event Summary

As referenced in the above RW discussion of ALCOAST 133-13, there have been significant changes to hoist training factors in the CG's rotary wing community in the past five to ten years. **Hoist platforms have changed**: Contract boats are employed by a growing number of aviation units and 47-ft Motor Lifeboats (MLB) and 45-ft Response Boat-Mediums (RB-M) have replaced their predecessors at CG boat stations.

Hoist training/procedures have changed: ATC Mobile modified and standardized hoist procedures, EP guidance, and incorporated simulation of hoist procedures during annual proficiency courses. Further, awareness of pilot and FM proficiency remains critically important to the discussion. Pre-flight discussions must continue to discuss hoist recency/proficiency. Proficiency is not as simple as counting the number of days since the last time a member hoisted, but should also factor the quality of recent hoist evolutions performed and overall crewmember experience. Adding to the dynamic nature of hoist operation risk management, hoist experience/proficiency factors need to extend to the boat crew team as well.

Air Station Barbers Point conducted a detailed analysis of their unit's boat hoist operations, using a comparison of local hoist mishaps to both H-65 and overall rotary-wing boat hoist mishap events for context. Based on their analysis, the FSOs developed a local course of action to address these issues, and have shared the analysis results with interested units. The analysis was used as the framework for the 10-yr hoist and RS mishap data illustrated herein.

RS-Related Mishaps

The data shown in the figure below reveals an upward trend of RS injuries and shear events beginning in FY11. The last upward trend (FY 2006-2010) continued for five years prior to a marked reduction.

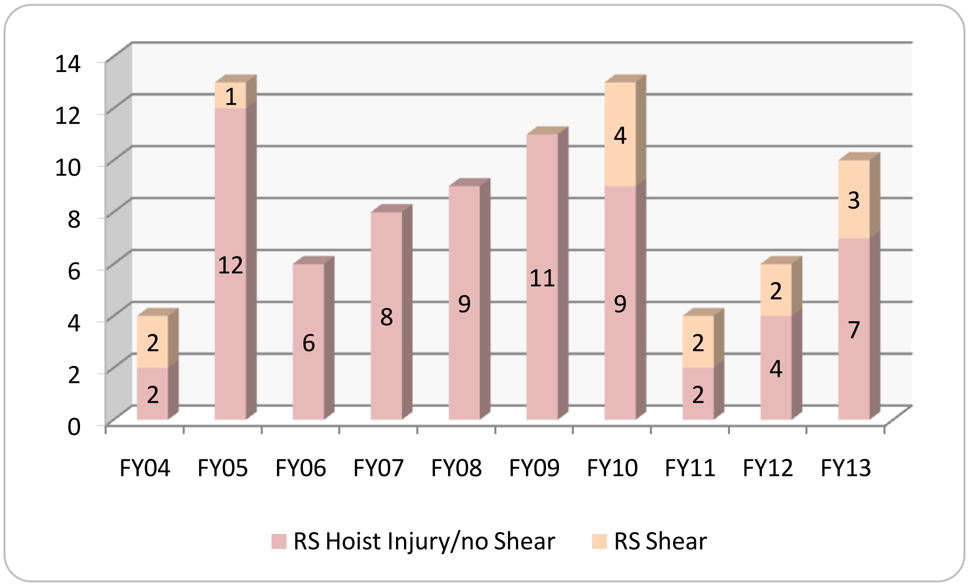


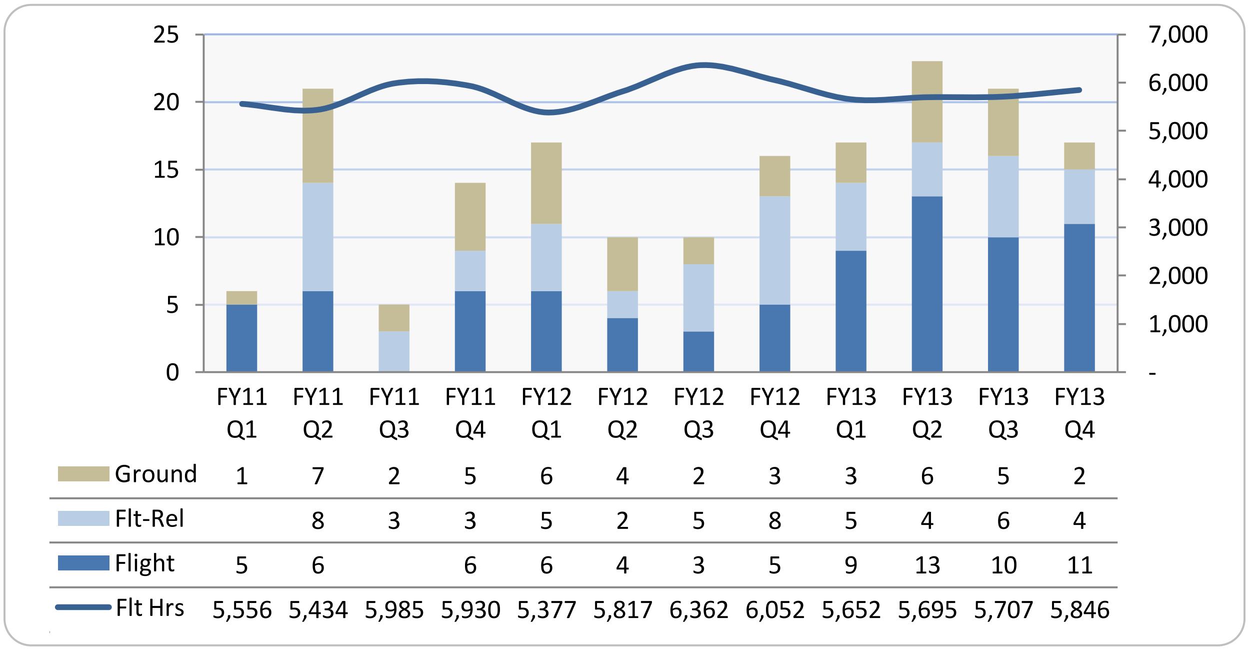
Figure 11: Hoist-related RS Injury/Shear Events

MH-60 Jayhawk

MH-60s flew 22,899 flight hours in FY13, down 3% from FY12, representing 21% of all CG flight hours and 102.5% of allocated program hours. The availability rate was 74.5% in FY13, up 1.5% from FY12. Training hours increased 7% from last year's total, while resource hours flown in support of PWCS, SAR, and Ferry operations all trended down from previous years. The H-60 fleet reported 77 mishap events: 42 flight, 19 flight-related, and 16 (aviation) ground mishaps. Among the 61 flight and flight-related mishaps, there were ten Class C, 46 Class D, and six Class E mishaps reported.

> In FY13, the H60 fleet experienced a 400% increase in reported in-flight material failures or malfunctions.

The overall number of mishaps was up from 53 in FY12, due in large part to a 400% increase (from seven in FY12 to 28 in FY13) in reports of in-flight materiel failures/malfunctions. From the human factor perspective, maintenance error contributed to three of the five most costly H-60 mishaps in FY13, including a failure to refill the MGB with oil following maintenance actions. Of 38 H-60 mishaps with human causal factors (i.e., excluding mishaps caused by materiel failure, bird strikes, and laser events), half of these were related to maintenance error; up from 12 events in FY12.



	FY11 Q1	FY11 Q2	FY11 Q3	FY11 Q4	FY12 Q1	FY12 Q2	FY12 Q3	FY12 Q4	FY13 Q1	FY13 Q2	FY13 Q3	FY13 Q4
Ground	1	7	2	5	6	4	2	3	3	6	5	2
Flt-Rel		8	3	3	5	2	5	8	5	4	6	4
Flight	5	6		6	6	4	3	5	9	13	10	11
Flt Hrs	5,556	5,434	5,985	5,930	5,377	5,817	6,362	6,052	5,652	5,695	5,707	5,846

Figure 12: MH-60 Mishaps by OPMODE (FY 2011-2013)

Mishap Recommended Actions

In FY13, 16 post-mishap recommended actions from 14 mishaps were added to the eAVIATRS tracking system. Also, the VCG promulgated 10 directed actions based on his findings in the CG-6017 (La Push, WA) final decision safety message. MRR representatives from Tri-P, FORCECOM, and ATC have helped to address all of these recommendations: four are complete, while six pend final decision/solution.

Hoist Operations

Hoist operations remain the H-60's most mishap-prone phase of flight with ten mishaps total, down from 14 for FY12. Four of these mishaps involved cable foul or shear events. Electrical system mishaps were the second most frequently reported mishap type involving MH-60s in FY13, with seven events including three generator failures. Five mishaps involved flight control malfunctions including three materiel failures of the cyclic system.

Human Factors

The table below illustrates a breakdown of H-60 reported mishaps with a human factor cited as the primary causal factor; all classes (number in parentheses represents change from previous FY.)

Table 3: MH-60 reported mishaps sorted by primary causal factor; all classes

	2010	2011	2012	2013
TOTAL MISHAPS	48	46	53	78
Human Factor	27	30	28	37
Flight	10	8	7	9
Flt-Related	8	9	9	13
Aviation Ground	9	13	12	15
Materiel Factor	18	14	14	33
Physical Environment	3	2	11	8

[1] Human factor: The primary reason for the reportable mishap event was a factor related to the human operator(s) within the system, e.g., crew checklist error or maintenance violation.

[2] Materiel factor: The primary reason for the reportable mishap event was a materiel failure/malfunction, e.g., generator failure, engine chip, etc.

[3] Physical environment factor: The primary reason for the reportable mishap was a physical environment factor, e.g., bird or other wildlife strikes, laser events, etc.

Flotation System

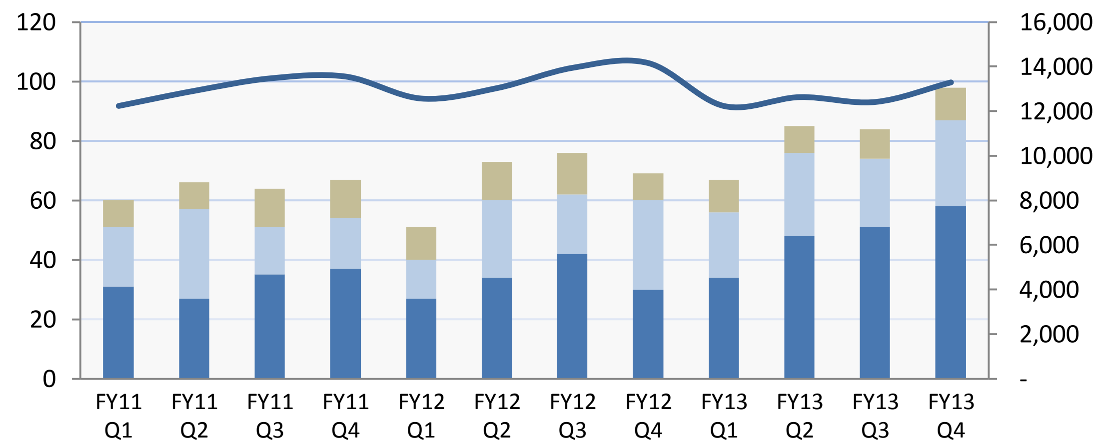
The MH-60 flotation system is comprised of four major components: flotation bags, inflation bottles, associated system plumbing, and explosive squibs. In early CY2013, the Original Equipment Manufacturer (OEM) for the bags and bottles informed the CG of ten-year life limits for those items. Due to lack of sources of supply from the OEM and no readily affordable alternative, aviation leadership decided to remove the emergency flotation system from all MH-60 aircraft. This decision was made with consideration to safety factors and based on a thorough review of mishap data; the probability of needing an emergency flotation device in a CG helicopter is remote. The system has never been used in the MH-60's 20 year operational life. The CG was the last military user of the H-60 to maintain an emergency flotation system. Special Compliance Technical Order (SCTO) MH60T T25470 dated 4 Dec 2013 provided instructions for removal of this wiring of this system.

Low Rotor RPM Horn

In July 2013 an MH-60T experienced a NR indication malfunction which resulted in a low NR horn impeding communications between the aircrew (see CG Air Station Elizabeth City RNO 2013013016). ALC completed a sound survey and found that the average low NR horn was louder than ideal for an audio alert system per human systems integration design. As a result of these findings, the MH-60T Conversion Pilot Working Group is involved in fine-tuning the Low-Nr alert application as part of ICS Phase 5 System upgrade. A solution to this problem is forecast to be developed in 2014.

MH-65 Dolphin

MH-65s flew 50,599 flight hours in FY13, down about 6% from FY12, representing 47% of all CG flight hours and 92% of allocated program hours. The availability rate was 69.7% in FY13, down less than 1% from FY12. Training hours were up 4% from last year's total, while resource hours flown in support of PWCS, LE, and SAR all trended down from previous years. The H-65 fleet reported 334 mishap events: 192 flight, 101 flight-related, and 41 (aviation) ground mishaps. Among the flight mishaps, there was one Class B, seven Class C, 157 Class D, and 27 Class E mishaps reported. The overall number of mishaps was up in large part because of a 40% increase in reports of in-flight materiel failures/malfunctions (from 87 in FY12 to 122 in FY13): reports of aborted missions for electrical, FADEC, and AFCS system malfunctions experienced some the larger increases in FY13. From the human factor perspective, crews practicing single-engine maneuvers resulted in two of the three most costly H-65 mishaps in FY13, including a Class B hard landing mishap in December of 2012. Of mishaps with human causal factors (i.e., excluding materiel failure, bird strikes, and laser events), 33.1% (52 of 157) of the H-65 mishaps were related to maintenance error, down slightly from 38.6% in FY12 (51 of 132).



	FY11 Q1	FY11 Q2	FY11 Q3	FY11 Q4	FY12 Q1	FY12 Q2	FY12 Q3	FY12 Q4	FY13 Q1	FY13 Q2	FY13 Q3	FY13 Q4
Ground	9	9	13	13	11	13	14	9	11	9	10	11
Flt-Rel	20	30	16	17	13	26	20	30	22	28	23	29
Flight	31	27	35	37	27	34	42	30	34	48	51	58
Flt Hrs	12,24	12,92	13,48	13,56	12,57	13,04	13,95	14,16	12,23	12,63	12,42	13,30

Figure 13: MH-65 Mishaps by OPMODE (FY 2011-2013)

Hoist Operations

Hoisting operations remain our most mishap-prone phase of operations. Thirty-nine hoisting mishaps in FY13 is the highest recorded number in 10 years, with rescue swimmer injuries, hoist snags, and hoist shears all trending up from previous years. By comparison, the H-65 fleet's 10-year average is just below 20 events per year. In March, the Office of Aviation Forces, in conjunction with FORCECOM, implemented boat hoisting hand signals for both helicopter flight manuals and boat TTP, standardizing training practices/procedures in response to concerns raised in many recent post-hoist mishap analyses and helicopter STAN workshops.

> Milestone: FY13 marked the first time since electronic mishap records began in 1985 that the H65 did not have a cabin sliding door separate from the aircraft.

Main Gearbox Overtorques

Main gearbox overtorques were the most frequently reported type of mishap involving MH-65s in FY13. There were 33 events (22 day, 11 night/dusk) costing $336k, with a median repair cost of $522, and a maximum cost of $154k. The frequency of overtorques is up from 29 events in FY12, but down from 45 in FY11 and 54 in FY10. The aircraft weight ranged from 9,450 lbs to 8,200 lbs and the average aircraft weight at the time of the mishap was 8,778 lbs (*SD* = 323).

Table 4: MH-65 reported mishaps sorted by primary causal factor; all classes

	2010	2011	2012	2013
TOTAL MISHAPS	**244**	**246**	**270**	**334**
Human Factor	133	123	138	168
Flight	69	39	56	82
Flt-Related	44	43	43	50
Aviation Ground	20	41	39	36
Materiel Factor	82	99	95	127
Physical Environment	29	23	37	39

[1] For a description of the causal factors listed above, refer to the MH-60 table summarizing the same data.

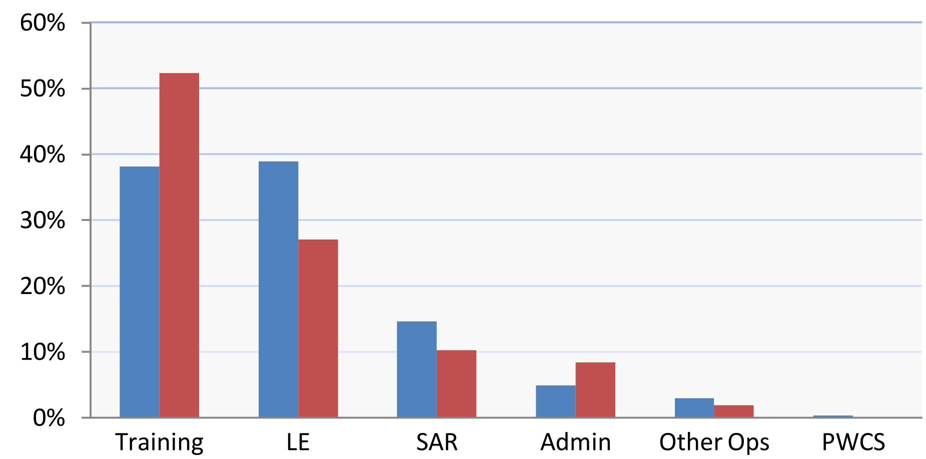
Conversion and Sustainment Project

The H-65 remains in the midst of its transition through the H-65 conversion/sustainment project to improve the capability, reliability, and maintainability of these airframes. As of February 2014, 63 MH-65D models have been delivered to field units, with all units expected to be complete by May 2015. ESS (FLIR) and HUD systems have been purchased for the entire fleet. As the MH-65E test and development continues, the CG is in contract with Rockwell Collins and Turbomeca to develop and integrate the Common Avionics Architecture System (CAAS).

Fixed Wing Mishap Summary

This section summarizes cross-cutting topics of interest the fixed-wing community. Please refer to the platform-specific sections and the 2013 Aviation FSO's *Flight Plan* at the end of this report for additional relevant information.

With the arrival of FY2014 the CG's fixed wing fleet finds itself undergoing a significant transformation within all of its airframes. From the final retirement of the venerable HU-25 to the standing up of the C27J Asset Project Office (APO), the growth and changes forecasted to occur over the next year will ensure that the fixed wing fleet is equipped to execute its myriad missions while safely operating in increasingly complex domestic and foreign airspace. During this dynamic time fixed wing aviators can expect to be challenged to adjust to new airframes, enhanced cockpits, evolving airspace, and the ongoing integration of technology into the flight and mission planning process.



	Training	LE	SAR	Admin	Other Ops	PWCS
Flt Hr Percentage	38%	39%	15%	5%	3%	0%
Mishap Percentage	52%	27%	10%	8%	2%	0%

Figure 14: Fixed Wing Flight Hour and Mishap Percentage by Mission

The CG's Safety Management System (SMS) provides a framework for aviation personnel to continue effective fixed-wing mission execution.

Automation

The C-130J, C-130-A1U, HC-144 and C-27J are all typified by advanced glass cockpits and Flight Management Systems (FMS) designed to reduce aircrew workload while simultaneously increasing situational awareness. When properly employed these systems provide mission and safety multipliers critical to our service's success. We must remain aware of potential negative impacts of advanced systems. The two most prevalent are automation complacency and the erosion of basic stick and rudder skills. As pilots adhere to the Air Operations Manual's guidance to maximize automation whenever practical, we recommend that pilots review a 25-minute video entitled *Children of Magenta*. Although dated, this 1997 American Airlines video (http://vimeo.com/64502012), offers an excellent presentation on the potential adverse effects of automation on pilot decision making and basic flying skills. To further educate all of CG aviation on this subject, CG-1131 has teamed with ATC Mobile instructors to make automation the focal point of the CRM leadership class presented to all Proficiency and Transition Course students during FY14.

Night Vision Goggles

The use of NVGs in fixed wing cockpits continues to expand. C-130Js and HC-144s include these devices as part of their initial qualification and routine training syllabi. The C-130H Stan Team has recently completed training and qualification of the Flight Examiner corps at Air Station Clearwater who in turn are beginning to instruct and qualify the unit's line pilots. As with all automation systems, the immense improvement in situation awareness provided by NVGs is accompanied by a unique set of potential hazards. Reduced visual acuity, loss of depth perception, increased pilot fatigue, and visual illusions unique to the NVG environment are all attributes of NVGs that must be emphasized during pilot training and routine training flights. We must also remain aware to monitor and maintain unaided night proficiency.

Icing

Flight in the icing environment continues to be a major concern in all communities, but nowhere more so than the HC-144. To alleviate these concerns the HC-144 Training Branch at ATC Mobile is teaming with CG-711, CG-41, and CG-1131 to publish an enhanced version of the Adverse Weather Operations (Chapter 7) of the operator's manual. The branch also recently teamed with Air Station Cape Cod to field- test new pre-flight de-ice equipment and methods.

Doing More with Less

Even prior to the implementation of the sequester budget reductions, pilots routinely identified reduced training opportunities and the resultant loss of proficiency as what they believed would be the major causal factor should another major mishap occur. As the CG progresses into AY14 it is not expected that PFHs will be increased. Additionally, the retirement of the HU-25 will necessitate an influx of former Falcon pilots into other fixed wing platforms, further taxing available training resources. This climate of scarcity demands that every hour in the air; be it operational, training, functional check flight, or cross-country; is maximized to hone one's skills while executing the assigned mission.

C27J Spartan Update

The 2014 National Defense Authorization Act (NDAA) authorized the CG to acquire, through an intra-service transfer, 14 Alenia Aermacchi C27J Spartan airframes. Once missionized, the C27Js will augment the Medium Range Surveillance Maritime Patrol Aircraft fleet. The NDAA directs the transfer of seven CG HC-130Hs to the Air Force for firefighting modifications and subsequent transfer to the Forest Service.

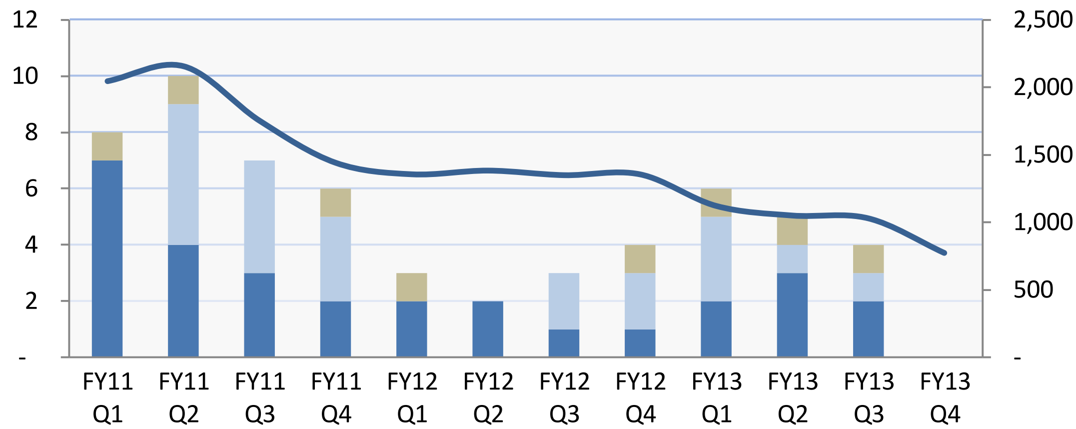
The Air Force Safety Center reports that during its operational service (including combat), the C27J delivered a strong safety record with no major mishaps reported. Safety records external to the Air Force were not available at the time of this writing. As the aircraft are modified for CG operations, CG-1131 will partner with the C27J Asset Project Office (APO), CG-711, CG-41, Special Operations Command, allied partners and Alenia to obtain and share all available aircraft and safety information.

Flight Safety Officer Staffing

The ongoing advancement of the Maritime Covert Surveillance Aircraft (MCSA) program and the stand up of the C27J APO are both expected to progress throughout FY14. An FSO billet has been established for both of these programs to ensure the necessary safety expertise is available to each program's leadership. The MCSA FSO billet was shopped during the AY14 assignment process and it is expected that the C27J FSO billet will be announced via an OPM shopping list update as the billet structure is finalized and approved.

HU-25 Falcon

HU-25s flew 3,971 flight hours in FY13, down 27% from FY12, representing four percent of all CG flight hours and 99% of allocated program hours. The availability rate was 72% in FY13, equal to FY12. Resource hours dedicated to all major missions decreased from previous years, with training hours declining a about 19%. The HU-25 fleet reported five mishap events: three flight, one flight-related, and one ground mishap. Of the four flight and flight-related mishaps, all were Class D mishaps. From a human factor perspective, only one mishap was related to a human/operator factor.



	FY11 Q1	FY11 Q2	FY11 Q3	FY11 Q4	FY12 Q1	FY12 Q2	FY12 Q3	FY12 Q4	FY13 Q1	FY13 Q2	FY13 Q3	FY13 Q4
Ground	1	1		1	1			1	1	1	1	
Flt-Rel		5	4	3			2	2	3	1	1	
Flight	7	4	3	2	2	2	1	1	2	3	2	
Flt Hrs	2,044	2,155	1,751	1,440	1,355	1,382	1,348	1,354	1,121	1,049	1,029	772

Figure 15: HU-25 Mishaps by OPMODE (FY 2011-2013)

Table 5: HU-25 reported mishaps sorted by primary causal factor; all classes

	2010	2011	2012	2013
TOTAL MISHAPS	**18**	**31**	**12**	**15**
Human Factor	8	8	5	5
Flight/Flt-Related	4	6	3	2
Aviation Ground	4	2	2	3
Materiel Factor	8	18	4	6
Physical Environment	2	5	3	4

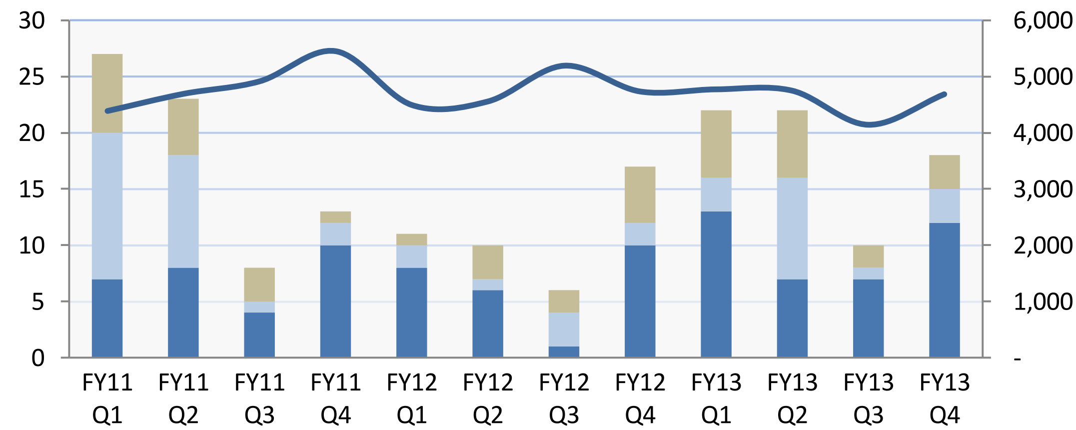
[1] Human factor: The primary reason for the reportable mishap event was a factor related to the human operator(s) within the system, e.g., crew checklist error or maintenance violation.

[2] Materiel factor: The primary reason for the reportable mishap event was a materiel failure/malfunction, e.g., generator failure, engine chip, etc.

[3] Physical environment factor: The primary reason for the reportable mishap was a physical environment factor, e.g., bird or other wildlife strikes, laser events, etc.

HC-130H/J Hercules & Super Hercules

HC-130s flew 18,357 flight hours (4,021 J hrs) in FY13, down about 3% from FY12, representing 17% of all CG flight hours and 98% of allocated program hours. The availability rate was 72.6% in FY13 (71.8% HC-130H; 75.2% for HC-130J), up 3.8% from FY12. Training hours held steady, up 2.7% from last year's total, while resource hours flown in support of LE, SAR, and Ice operations trended slightly down from prior years. The HC-130 fleet reported 72 total mishap events: 39 flight, 16 flight-related, and 17 (aviation) ground mishaps. Among the 55 flight and flight-related mishaps, there were two Class C, 40 Class D, and 13 Class E mishaps reported. The overall number of mishaps (72) was up sharply from 44 in FY12, in part because of a 65% increase in in-flight materiel failures/malfunctions, but on par with the last two years. Eight of the top ten most costly HC-130 mishaps were related to single component failures/malfunctions. From a human factor perspective, maintenance error contributed to a third of HC-130 mishaps (26 of 72), and accounted for 85% of human factor mishaps in the HC-130 fleet; up from 15 of 22 HF mishaps in FY12.



	FY11 Q1	FY11 Q2	FY11 Q3	FY11 Q4	FY12 Q1	FY12 Q2	FY12 Q3	FY12 Q4	FY13 Q1	FY13 Q2	FY13 Q3	FY13 Q4
Ground	7	5	3	1	1	3	2	5	6	6	2	3
Flt-Rel	13	10	1	2	2	1	3	2	3	9	1	3
Flight	7	8	4	10	8	6	1	10	13	7	7	12
Flt Hrs	4,389	4,695	4,918	5,454	4,496	4,559	5,196	4,737	4,775	4,751	4,144	4,688

Figure 16: HC-130 Mishaps by OPMODE (FY 2011-2013)

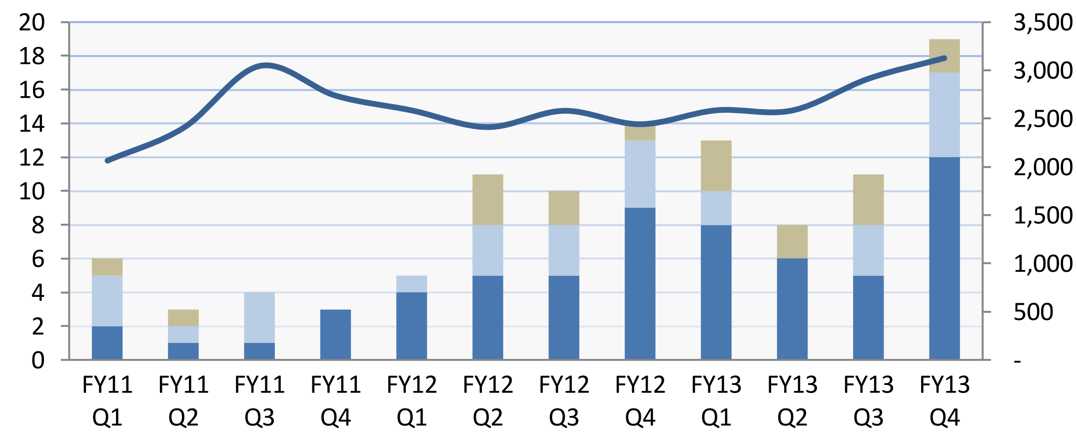
Table 6: HC-130 reported mishaps sorted by primary causal factor; all classes

	2010	2011	2012	2013
TOTAL MISHAPS	**81**	**71**	**44**	**72**
Human Factor	31	31	22	30
Flight	13	7	5	7
Flt-Related	5	10	8	7
Aviation Ground	13	14	9	16
Materiel Factor	43	26	20	33
Physical Environment	7	14	2	9

[1] For a description of the causal factors listed above, refer to the HU-25 table summarizing the same data.

HC-144A Ocean Sentry

HC-144s flew 11,215 flight hours in FY13, up 12% from FY12, representing approximately 10% of all CG flight hours and 91.5% of allocated program hours. The availability rate was 64.3% in FY13, up 2% from FY12. Resource hours dedicated to major missions increased from last year, with training hours increasing 1,000 hrs from last year's total. The HC-144 fleet reported 51 mishap events: 31 flight, 10 flight-related, and 10 (aviation) ground mishaps. Among the 41 flight and flight-related mishaps, there was one Class C, 45 Class D, and five Class E mishaps reported. The overall number of mishaps was up from 40 in FY12, with flight mishaps increasing from 23 to 31. Component failures/malfunctions accounted for 20 of these mishaps. From the human factor perspective, maintenance error contributed to 31% (16) of the mishaps, three of the five most costly HC-144 mishaps in FY13. Of 26 HC-144 mishaps with human causal factors, over half of these (16) were related to maintenance error.



	FY11 Q1	FY11 Q2	FY11 Q3	FY11 Q4	FY12 Q1	FY12 Q2	FY12 Q3	FY12 Q4	FY13 Q1	FY13 Q2	FY13 Q3	FY13 Q4
Ground	1	1				3	2	1	3	2	3	2
Flt-Rel	3	1	3		1	3	3	4	2		3	5
Flight	2	1	1	3	4	5	5	9	8	6	5	12
Flt Hrs	2,064	2,405	3,047	2,739	2,586	2,412	2,582	2,442	2,587	2,585	2,914	3,129

Figure 17: HC-144 Mishaps by OPMODE (FY 2011-2013)

Table 7: HC-144 reported mishaps sorted by primary causal factor; all classes

	2010	2011	2012	2013
TOTAL MISHAPS	**8**	**16**	**40**	**51**
Human Factor	5	8	15	26
Flight	2	2	4	12
Flt-Related	1	4	5	5
Aviation Ground	2	2	6	9
Materiel Factor	3	7	21	20
Physical Environment	0	1	4	5

[1] For a description of the causal factors listed above, refer to the HU-25 table summarizing the same data.

Personal Injuries

Personal injury data are shown in Table *8: Summary of Aviation Injury Types (FY 2009-2013)* and *Figure 18: CG Personnel Injuries / Deaths as a Result of Aviation Operations (FY 2008-2013)*. The first table includes a separate entry for laser events that resulted in injury. CG-1131 is working to update our database to accurately track all laser events with further clarification regarding related injuries.

Table 8: Summary of Aviation Injury Types (FY 2009-2013)

Type Injury	2009	2010	2011	2012	2013	5-Yr Avg
Back	0	0	1	0	0	0.2
Ears / Cabin Pressure	0	2	0	0	1	0.6
Electrical	1	0	0	2	1	0.8
Eyes	1	3	4	4	6	3.6
Fall	1	1	1	3	2	1.6
Finger	2	0	2	0	2	1.2
Fumes	0	0	0	0	1	0.2
Ground Equip	0	0	0	2	1	0.6
Hand	0	1	1	3	1	1.2
Head	4	2	3	6	6	4.2
Hoisting	0	0	0	1	5	1.2
Jacking	0	0	1	0	0	0.2
Laser (no injury)	6	16	17	28	30	19.4
Laser Injury[1]	0	1	3	7	14	5
Radar Exposure	1	0	0	0	2	0.6
Rescue Swimmer	10	6	2	4	10	6.4
Other	0	3	3	0	2	1.6

[1] All injuries are mutually exclusive (e.g., laser injury not also reported as eye injury).

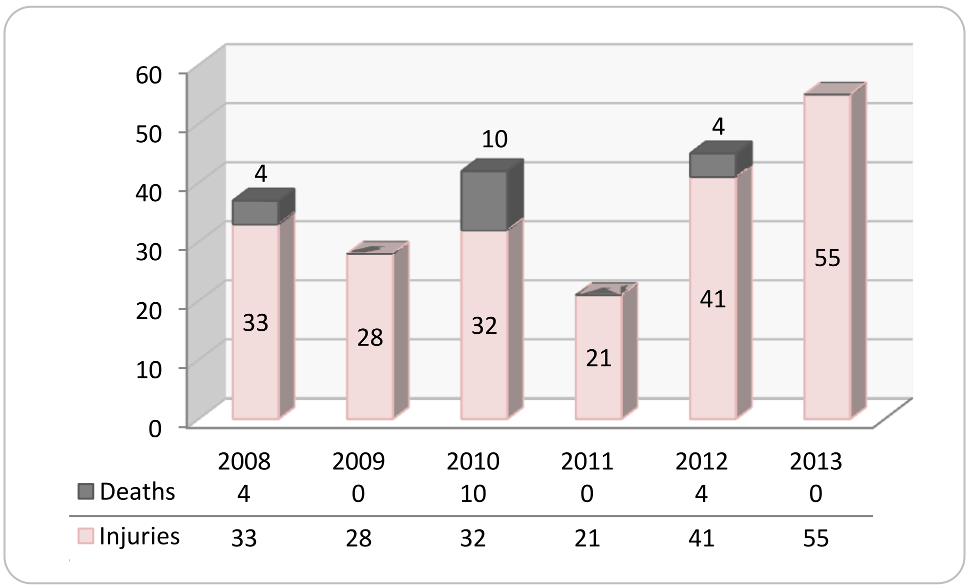


Figure 18: CG Personnel Injuries / Deaths as a Result of Aviation Operations (FY 2008-2013)

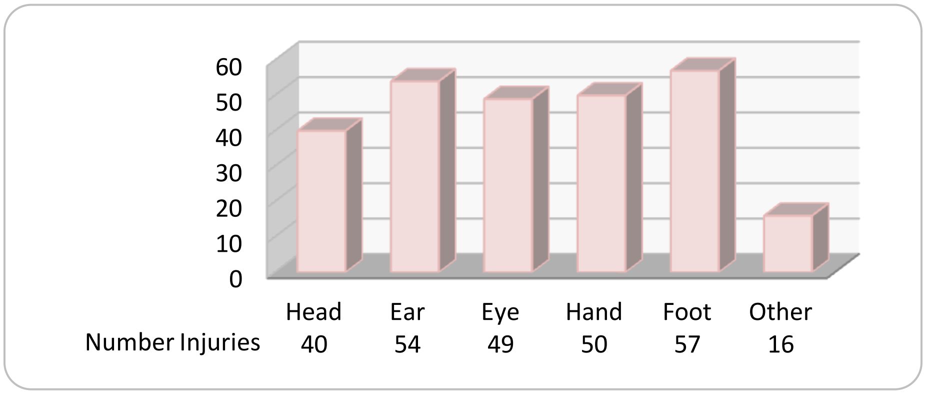


Figure 19: FY13 On-Duty Injuries – By Type

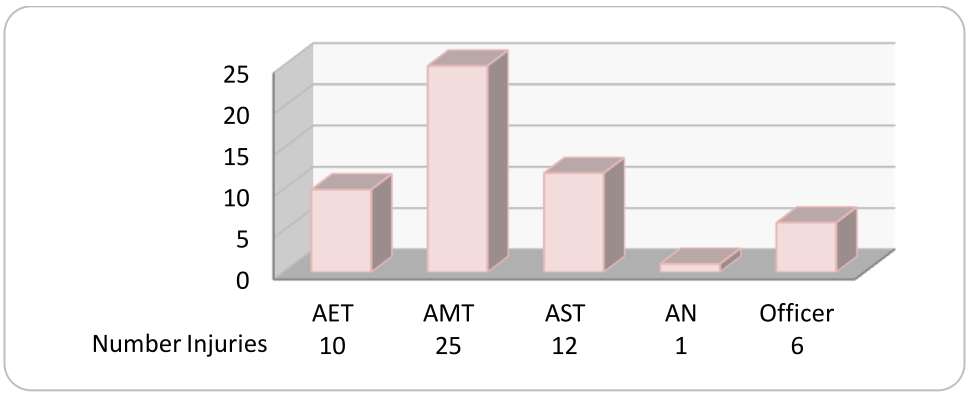


Figure 20: FY13 On-Duty Injuries – By Rate

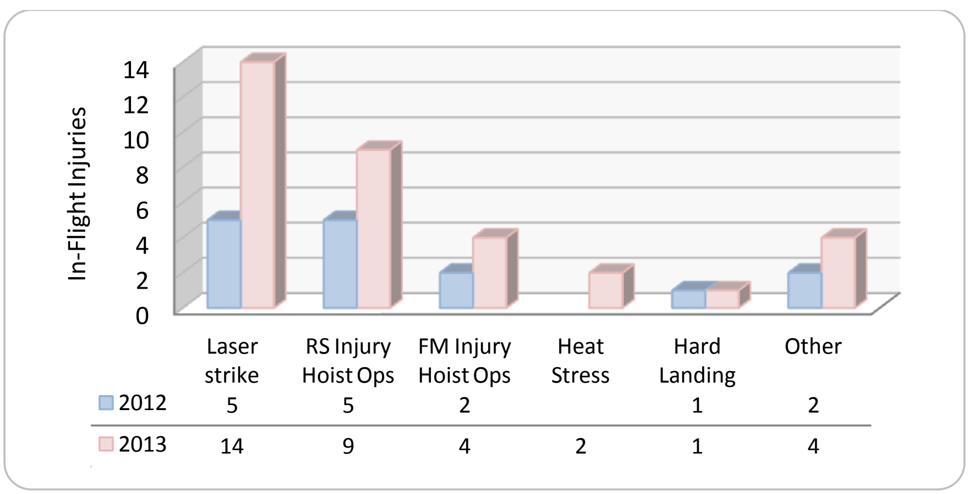


Figure 21: In-Flight Injuries (FY 2012-2013)

Just Culture

A Values-Supportive Approach to View Error, Failure and Learning

What is a Just Culture?

Just	**Fair, Consistent**
Culture	**Shared beliefs, attitudes, values**

Just culture aims to standardize leadership response to three areas: errors, at-risk behavior and reckless choices. In all cases, team members review system design factors for learning opportunities. In a just culture, staff at executive, management, and line levels engage and align. Organizational leadership is accountable for providing safe and effective systems and for responding to personnel behaviors in a fair and just manner. Personnel are accountable for: (1) personal choices, and (2) reporting errors and system vulnerabilities.

Figure 22: Response to Errors, At-Risk Behavior and Reckless Choices

Errors

When personnel commit errors, the normal human response is embarrassment, shame, and disappointment. The appropriate leadership response is to support and console personnel that commit those errors. Consoling includes verbal and candid discussion in an empathetic and supportive environment. Over time, uncorrected errors tend to become at-risk behavior.

At Risk Behavior

At-risk behavior increases risk and leads individuals to unrecognized risk acceptance or justification. Constructive leadership response to at-risk behavior is coaching, with a values-supportive discussion of safe behavior. Coaching must be productive, and yield organizational learning and personal growth.

Reckless Choices

Reckless choices involve deliberate behavior to accept unwarranted risk. Known reckless choices are clearly called out in education, training, policy, and team meetings. In a just culture, the member who chooses to engage in a reckless choice should expect a level of personal and professional accountability.

Note: At-risk behavior differs from *Warranted Risk.* Warranted risk is a deliberate choice to accept risk that is justified by operational necessity.

Appropriate Behavior Response

Just culture must not be confused with a 'no blame' culture. When personnel engage in a reckless or criminal act, just culture advocates sanction or punishment. A consistent and fair response to error, at-risk, and reckless behavior regardless of outcome is important to sustain a just culture.

Dr. James Reason, the father of the *'Swiss Cheese Model'* included just culture in a five-step safety culture model.

Figure 23: Safety Culture Model

Just Culture Roadmap

CG-113 seeks to implement just culture through the following actions:

- Introduce just culture to headquarters and fleet leadership, seeking feedback and buy-in.
- Develop and deliver just culture training that is integrated with existing safety programs.
- Integrate just culture into next generation Operational Risk Management (ORM) tools.

Sources:

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Safety Management System

Today's modern CG is migrating to increasingly diverse and complex systems to meet operational demands. The rapid increase in volume and variety of operations will challenge current safety strategies and practices. To meet these challenges the CG is adopting a business-like management framework to institute and oversee safety efforts. Just as businesses use management systems to coordinate activities to remain competitive and maintain business viability, Safety Management Systems (SMS) leverage similar frameworks to manage safety.

SMS is a reorganization of safety activities in a standardized, forward-looking manner to identify and control hazards. The goal of a successful SMS is to maximize mission effectiveness by mitigating hazards to manage risk to acceptable levels and prevent mishaps. The four components that comprise SMS are 1) Safety Policy, 2) Safety Risk Management, 3) Safety Assurance, and 4) Safety Promotion. These components (also referred to as pillars) and related support elements are illustrated in *Figure 24: CG-SMS Framework*. As illustrated in the figure, supporting elements include a strong safety culture, engaged safety leadership and aligned collaboration among all members.

Figure 24: CG-SMS Framework

Traditional Safety Management

The CG aviation safety program incorporates several advanced SMS elements. We maintain several mature and integrated safety programs and systems throughout our aviation enterprise. Core aviation safety, operations, engineering and logistics policies, and management tools are managed and executed at headquarters, operational and support commands, and line units. The headquarters Tri-P (CG-1131, CG-711 and CG-41) and their fleet counterparts routinely collaborate to address cross-cutting goals and objectives focused on continuous improvement of aviation safety: mission effectiveness (*doing the right things*), and operational efficiency (*doing things right*). The CG manages programs and deploys systems that enhance safety for our aircrews and beneficiaries of CG aviation capabilities. We enjoy a proud aviation safety legacy with our DoD counterparts that forms the basis for much of the modern SMS now considered a worldwide industry standard. If that assertion is true, we think we can do better than just maintain the status quo.

Innovating Toward CG-SMS

The world's top performing organizations are continuously evolving. As billionaire businessman and founder of Virgin Atlantic airlines Richard Branson states, "*If you aren't innovating, you are going backwards.*" Following that line of logic, what can CG aviation do to improve how we manage safety? Benchmarking the most proven commercial industry SMS standards and protocols is a good start. So that is exactly what we did.

CG-1131 commissioned a gap analysis of current CG aviation policies and safety checklists when compared to SMS standards and protocols (e.g., FAA, ICAO, etc.). The analysis also supported an FSO Front End Analysis (FEA) with FORCECOM and development of a new unit SMS assessment tool. The goal is to implement a tailored CG-SMS focused on the enhancement of core safely elements practiced by the world's highest performing aviation operators. The principles of SMS are introduced in the upcoming revision of the Safety Manual as a management structure rather than a sweeping policy change. Further intergradations of SMS protocols into our safety programs must first include a careful assessment for CG relevancy and value. The following sections summarize some recent SMS-related activities.

Policy

This component establishes senior leadership's and management's commitment and expectations to continually improve safety and defines the methods, processes, and organizational structure needed to meet safety goals. Not all safety policy resides in our Safety and Environmental Health manual. Instead, CG safety doctrine, policy, and Tactics, Techniques, and Procedures (TTP) are integrated into nearly every operational and logistics document that we consider relevant to our operational way of life. The following paragraphs summarize policies that form the basis of our safety roles and responsibilities. We challenge you to become the expert on these aviation and safety references and provide feedback on how we can improve them.

Safety and Environmental Health Manual

The *Safety and Environmental Health Manual*, COMDTINST M5100.47 (series) Revision A is in the final stages of review and slated for release in FY14. The revision includes several policy updates and clarifications; some TTP content is extracted for republication in more flexible guidance documentation. Additionally, much of the TTP has been removed and will be included in an updated Mishap Analysis and Reporting Guide (MARG).

Operational Risk Management

The *Operational Risk Management* Instruction, COMDTINST 3500.3 (series) formalizes processes, and procedures to implement risk management (RM). This instruction is under revision and is slated for release in FY14. One of its major changes is the transition to more deliberate RM practices that will increase awareness of hazard exposure early in the operational day and afford greater opportunity for mitigation. The other major change is the integration of all CG risk management-related programs (e.g., CRM, MRM, CEM, etc.) to standardize content and emphasize the contribution of all these hazard identification activities to help establish and sustain an effective risk management program.

Mishap Analysis and Reporting Guide

The Mishap Analysis and Reporting Guide (MARG) is also under development and when complete will be managed by the Health, Safety and Work Life Service Center (HWSL SC). The MARG contains guidance, and the forms and templates relevant to mishap analysis and reporting. Until the MARG is published, FSOs should refer to the Mishap Investigation Guide (MIG) on CG-1131's public web site by clicking here.

Air Operations Manual

Promulgated in February 2013, the latest *Air Operations Manual*, COMDTINST M3710.1G included among other policy updates, the following: expanded annual physiological training requirements (e.g., RW pilot night adaptation, visual and vestibular illusions, benefits of physical fitness, etc); incorporated and expanded policies for Flight Safety for Non-Aircrew Coast Guard Personnel; and expanded safety policy and guidance for mission essential /non-aircrew personnel. There are 137 instances of the keyword safety in this manual (22 with flight safety).

Aeronautical Engineering Maintenance Management Manual

Promulgated in April 2011, the latest *Aeronautical Engineering Maintenance Management Manual*, COMDTINST M13020.1G included updates to reflect CG Modernization. There are 42 instances of the keyword safety in this manual (nine with flight safety). This manual is not just for the wrench turners. FSOs should review this manual and become familiar with how it supports overall flight safety in the CG.

Risk Management

Risk is inherent in all tasks, training, missions, operations, and in personal activities no matter how routine. Risk Management (RM) is a systems-oriented process to identify, assess and control hazards to manage risk associated with any activity.

Warrranted vs. Unwarranted Risk

In the August 2013 issue of the U.S. Naval Institute's Proceedings Magazine (Vol. 139/8/1,326), the VCG penned his thoughts on "*Risk Management for the Proficient Operator.*" Specifically, when faced with a situation that may require deviating from normal operations one must "…pay due diligence to risk management and develop a well-thought plan of action." To achieve this due diligence, he advocates the following actions: Identify gain, assess risk, crew engagement, decision/plan of action, and a return to normal operations. The article summarizes warranted risk, manageable risk, and the vertical integration of risk mitigation and challenges readers to consider and apply these concepts in their operational communities.

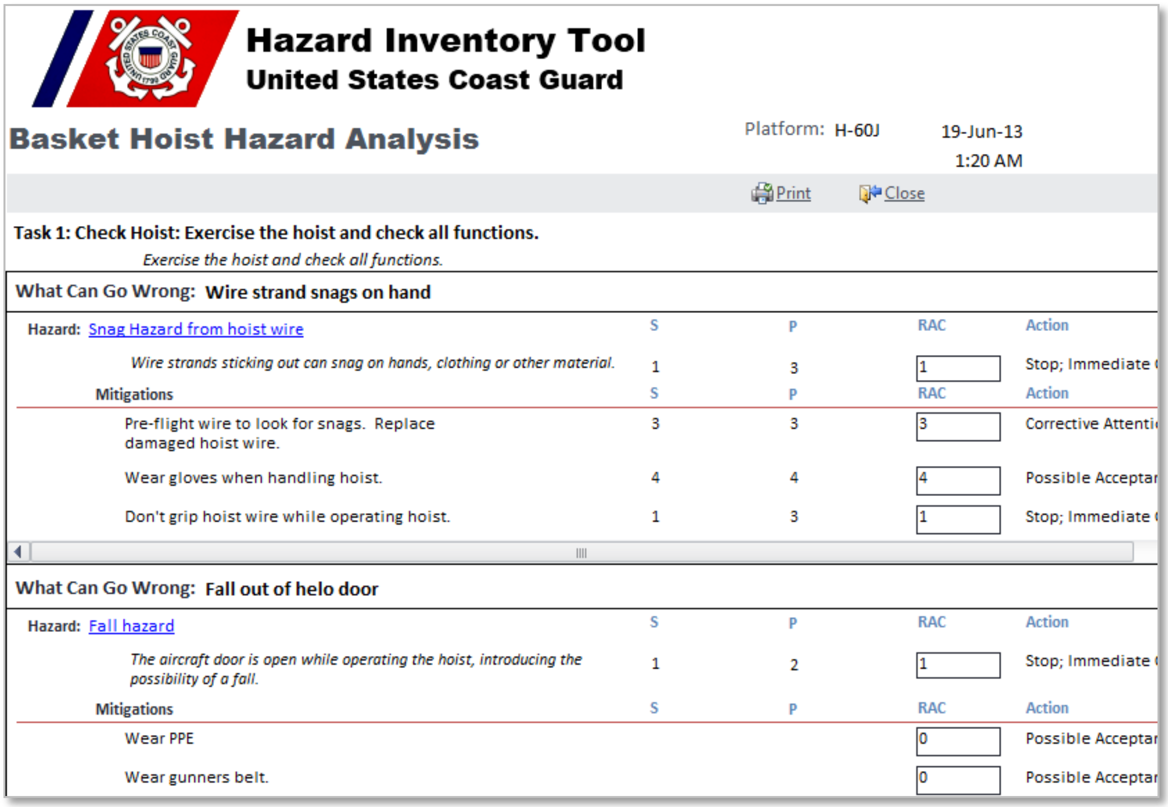
To answer this challenge and support the risk management needs of operators, CG-113 continued its efforts in FY13 to develop processes, training, tools, and guidance to update and improve the Operational Risk Management (ORM) program. A series of SITREPS (ALCOAST 003/13, 212-13, and 410/13) were released this year to describe and explain the purpose and intent of the latest RM changes and tool development. Future SITREPs will describe what to expect from the program advancements. The following sections offer a preliminary look and brief description of newly developed RM tools that will support the VCG vision regarding warranted risk, and advance the RM program from reactive and real-time assessments to deliberate and proactive assessments that are essential to stay ahead of hazards associated with dynamic and uncertain operational demands.

Hazard Inventory Tool

ORM proficiency is commonly gained through on-the-job-training (OJT) where the member acquires hazard awareness either through direct exposure to the mission, or mentoring from experienced operators. While OJT has advantages, rapid attainment of advanced knowledge is not one of them. Members may wait years to begin advanced training or experience infrequent and challenging operational scenarios. Finally, OJT emphasizes *Time-Critical ORM*, typically conducted during pre-flight or in-flight operations, instead of *Deliberate ORM*, which delivers critical and essential hazard information to mission planners well in advance (e.g., hours, days, weeks, months) of operations.

The Hazard Inventory Tool (HIT) uses a database framework to capture the knowledge, experience, and hazard mitigation strategies of accomplished performers for community-specific tasks, evolutions and/or missions. The HIT presents a repository of mentor-like experience that is available anytime to assist users to prepare for less familiar operations or AOR familiarization. The HIT generates tailored hazard assessments to ensure unit-level operational realities are captured and delivered to all users. The HIT produces a hazard analysis report shown in *Figure 25: Hazard Inventory Tool Sample* which describes tasks associated with the evolution, what can go wrong during the task, why things can go wrong (hazards), and potential mitigation strategies for the hazards.

The HIT uses the Risk Assessment Matrix (RAM) approach to assign a Probability (P), likelihood that the hazard will lead to a mishap, and a Severity (S), the consequence of the mishap if it occurs, value for each hazard. The risk level for the hazard is calculated automatically by the HIT and represented as the Risk Assessment Code (RAC). Mitigations also use the RAM approach to assess the reduction in risk if the mitigation is used. Based on the RAC score an Action is recommended.



Hazard Inventory Tool
United States Coast Guard

Basket Hoist Hazard Analysis

Platform: H-60J 19-Jun-13 1:20 AM

Print Close

Task 1: Check Hoist: Exercise the hoist and check all functions.
Exercise the hoist and check all functions.

What Can Go Wrong: Wire strand snags on hand

Hazard: Snag Hazard from hoist wire	S	P	RAC	Action
Wire strands sticking out can snag on hands, clothing or other material.	1	3	1	Stop; Immediate (
Mitigations	S	P	RAC	Action
Pre-flight wire to look for snags. Replace damaged hoist wire.	3	3	3	Corrective Attenti
Wear gloves when handling hoist.	4	4	4	Possible Acceptar
Don't grip hoist wire while operating hoist.	1	3	1	Stop; Immediate (

What Can Go Wrong: Fall out of helo door

Hazard: Fall hazard	S	P	RAC	Action
The aircraft door is open while operating the hoist, introducing the possibility of a fall.	1	2	1	Stop; Immediate (
Mitigations	S	P	RAC	Action
Wear PPE			0	Possible Acceptar
Wear gunners belt.			0	Possible Acceptar

Figure 25: Hazard Inventory Tool Sample

Hazard Assessment Tool

Even the best legacy RM tools offer only a snapshot of risk/hazard exposure. To support the RM principle of dynamic and continuous risk assessment, the next generation of RM tools must provide users with a method to quickly assess multiple dynamic pre-mission factors and quantify crew and individual hazard exposure levels over an extended time horizon. The soon-to-be released Hazard Assessment Tool (HAT) demonstrated these key capabilities during early implementation trials. The HAT represents a state-of-the-art approach to quantify and standardize the hazard identification, assessment, and control elements of RM. Most importantly, the HAT is customized to the operational community and personalized to each user, allowing the RM process to fully integrate multiple unique aspects of operations into future risk assessments.

A sample HAT analysis output is illustrated in *Figure 26: Hazard Assessment Tool – Sample Assessment*. This figure displays a HAT trend line that projects estimated hazard exposure over the course of the workday based on the selected mission type, known weather conditions and crew proficiency. The three trend lines depict an increasing level of hazard exposure if a crew were to conduct a SAR (simple, medium, or hard complexity) mission under anticipated moderate weather conditions. As your units begin to employ the HAT in the coming year, here are some points to consider:

- Entry of HAT data at the start of the work day allows users to project total hazard exposure for up to 24 hours. If a mission is not scheduled, users may choose to select the most likely or most hazardous mission as a baseline calculation. This capability allows operators and leaders alike to forecast hazard exposure early in the workday or duty cycle, and then proactively manage it.

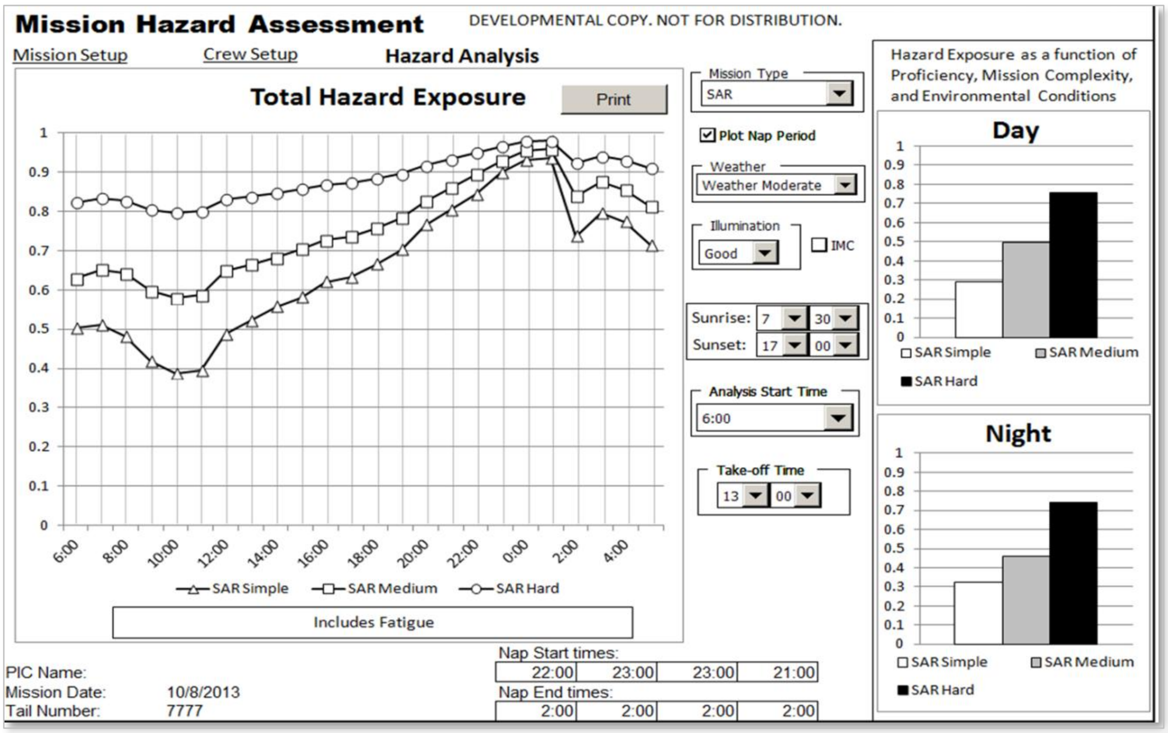


Figure 26: Hazard Assessment Tool – Sample Assessment

- Since missions span some period of time, the HAT allows a crew to progressively assess shifting hazard exposure throughout all phases of the mission.
- Knowing that hazard exposure increases over the course of the day due to known physiological realities, HAT developers knew they needed to consider more than just fatigue factors. The bar graphs to the right of the trend line represent hazard exposure levels absent fatigue factors. Although the trend lines may appear to only illustrate basic fatigue data, the HAT trend lines represent several other key elements (e.g., crew proficiency, mission complexity, environmental conditions) that expose members to operational hazards – NOT just fatigue. Comparing bar graph and trend line values, one can assess fatigue contributions to the hazard exposure score.
- Note in the figure above that hazard exposure levels reach a maximum value at approximately 0100 followed by a decrease until 0200. This improvement is derived from a one-hour sleep period earlier in the evening. In this scenario, the crew is able to conduct the mission with an increased margin of safety due to the benefits of just a short sleep period.
- If mission or environmental conditions change, the crew can simply update the relevant data fields on this screen and the hazard exposure score is refreshed automatically.
- When using the HAT at the beginning of a workday, Commands can use the output to determine when crews enter high hazard exposure and proactively apply mitigation strategies and controls.

The HAT and its associated data outputs will continue to evolve and improve based on feedback from the fleet. The aviation community is at the forefront of the HAT development. Many have provided valuable contributions during design and development, scenario-driven analyses, and unit calibration. Air Stations Miami, Savannah, San Diego, and HITRON Jacksonville have been instrumental in determining how best to integrate HAT into the operational fabric of the unit. The next phase of development includes full integration of the HAT across multiple communities. We continue to explore implementation options and anticipate localized roll-out activities throughout CY14.

Assurance

Safety assurance activities include internal evaluations of the effectiveness of the risk management strategies/programs in order to manage new hazards and emerging threats, and make improvements to existing safety programs. In the CG, some of the methods we currently use to support safety assurance include unit safety audits, climate surveys, mishap/hazard analysis, safety committees, flight standards boards, human factors councils, and anonymous reporting systems.

Assurance is the data cruncher's favorite SMS element. It takes a look at the past and present with an eye toward improving the future. The central question in safety assurance is whether we are collecting and analyzing the right information to make informed future decisions. Using a hazard analysis example, does a generic report of a bird strike give us all the information we need to learn from these events to prevent future incidents? Probably not, which is why awareness programs (such as BASH) seek more information about the event's location, time of day, phase of flight, and type of bird involved.

Accordingly, work through your FSOs and Commands if you have suggestions for CG-113 to improve safety assurance activities. We recognize that collecting metrics and data for no clear purpose can be perceived as a waste of time. As we consider future assurance activities, we will attempt to avoid this measurement trap. In that spirit, this section provides a summary of the most relevant and valuable assurance-related information.

COMDT Mishap Analysis Board (MAB) and Commandant Safety Board (CSB) Update

The backlog of Class A and Class B mishap analyses and reports has abated. The Post-Mishap Process Working Group (PMPWG) established sweeping process improvements that streamlined mishap analysis and review and will accelerate delivery of time critical mishap prevention information to the fleet. We are making steady progress, releasing four Final Decision (safety) Messages (FDMs) since April 2013. The table below illustrates recent activities and remaining mishap analysis and reporting objectives.

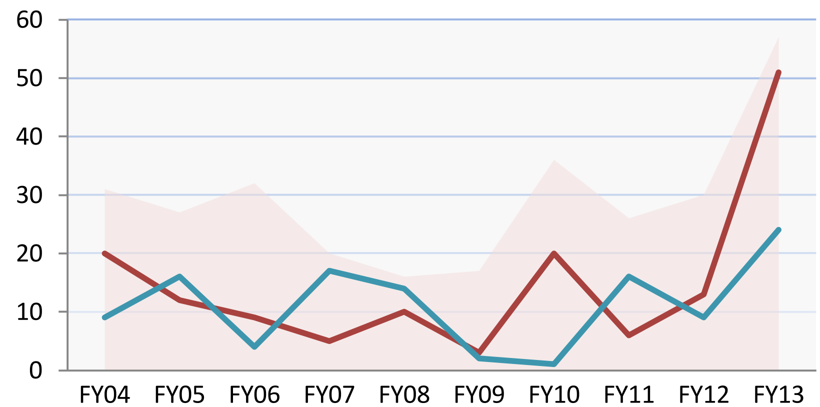
Table 9: Mishap Analysis Reporting Activities and Objectives

Acft	Date	Class/Mode	MAB	CSB	FDM Draft	FDM Release	Remarks
6003	29-Oct-08	A / Flt-Rel	☑	☑	☑	☐	Survivor fatality during SAR
1705	29-Oct-09	A / Flight	☑	☑	☑	30 APR 13	Midair during SAR
2139	17-Nov-09	B / Flight	☑	☑	☑	03 SEP 13	NLG collapse during trng
6028	3-Mar-10	A / Flight	☑	☑	☑	☐	CFIT during x-country
6523	20-Apr-10	A / Flight	☑	☑	☑	☐	CFIW during trng
6581	29-Apr-10	A / Flight	☑	☑	☑	☐	Runway crash during trng
6017	7-Jul-10	A / Flight	☑	☑	☑	12 JUL 13	Wire strike during x-country
6589	14-Oct-10	B / Flight	☑	☐	☐	☐	Hard landing during trng
6535	28-Feb-12	A / Flight	☑	☑	☑	11 FEB 14	CFIW during trng
6539	22-Aug-12	A / Flt-Rel	☑	☐	☐	☐	GFV Fatality during AUF-CD
6508	4-Dec-12	B / Flight	☑	☐	☐	☐	Hard landing during trng

Mishap Recommended Action Tracking System (RATS)

The Recommended Action Tracking System (RATS) is a component of the e-AVIATRS mishap reporting database that tracks post-mishap actions documented through linked mishap reporting sources. Directed Actions (DA) are generated by Class A and B Final Decision (Safety) Messages (FDMs) while Recommended Actions (RA) are generated by unit-level Class C-E mishap messages.

There are 587 open action items in the RATS database dating back to 1980; 10% (57) of which are DAs. With seven additional high profile aviation mishaps in varying stages of CSB, and VCG review, a clear plan to address and reconcile the growing number of old and new actions is paramount. CG-1131 is partnering with CG-711, CG-41, and FORCECOM (FC-T) to clear the backlog, focusing on resolution and/or closeout of high-profile action items. A summary of FDM-directed actions is illustrated below in *Figure 27: Class A-B Mishap Directed Actions (FY 2004-2013)*. [Note: RAs and DAs are tracked by message release date, not mishap date; closure entries reflect the date that required action is completed (e.g., flight manual change date, etc.)]



	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
DAs remaining	31	27	32	20	16	17	36	26	30	57
DAs submitted	20	12	9	5	10	3	20	6	13	51
DAs closed out	9	16	4	17	14	2	1	16	9	24

Figure 27: Class A-B Mishap Directed Actions (FY 2004-2013)

FSOs are encouraged to continue submitting valuable recommendations in unit mishap reports. Any pending unit actions (e.g., submissions of CG-22, flight manual changes, etc.) should be submitted prior to or concurrent with mishap report with a reference to the document submission date and applicable reference numbers. This enables CG-1131 to properly track and close out recommendations in a timely manner.

Unit Safety Standardization Visits

In FY13, CG-1131 completed six aviation safety standardization visits at the following Air Stations: Atlantic City, Borinquen, Corpus Christi, New Orleans, North Bend, and Washington. Every unit visited demonstrated clear indications of a positive safety culture and an engaged safety staff. We understand that the priority for safety program improvements may vary between units. Emphasis on one particular area may direct limited resources away from another area that requires more attention. We defer to each command to prioritize safety program activities in a balanced manner. Due to recent budget constraints, FSOs must now employ creative methods to execute meaningful promotional and training activities.

We applaud the continuing effort of commands that recognize funds spent on safety initiatives is money well-spent. Huang et all (Safety Professional magazine)[1] validates this claim:

> *ASSE (2002) has concluded that a direct, positive correlation exists between investment in SH&E and its subsequent return on investment.[2] OSHA (2007) asserts from its own evidence that companies implementing effective safety and health programs can reduce injury and illness rates by 20% or more-and generate a return of $4 to $6 for every $1 invested.[3]*

Here are some selected practices that FSOs have incorporated to enhance safety at their units. This is not an exhaustive list, just a primer for discussion for what may work at your unit. Some of these practices were observed during unit visits while others were revealed separately.

- Proactive reporting culture in which hazards and close call events with high potential for reoccurrence are reported to fleet as mishaps
- Use of small group discussions to address concerns raised in the annual safety survey
- Hazard reporting enhancements (direct web links from ALMIS, web-based reporting, etc.)
- Integrated mishap response beyond local stakeholders (e.g., external entities, cutters, etc.)
- Use of Eagle Eye and other safety incentive awards to enhance safety program visibility

One notable area of discussion is the need for more direct dialogue between the FSO and daily integration with Tri-P (OPS & EO). The rank disparity between FSOs and their Tri-P counterparts is a long-standing reality that remains a challenge for some FSOs. We will continue to work with prospective FSOs to equip them with the confidence to assume the safety leadership role. We also encourage unit Tri-Ps to instinctively include FSOs in their daily decision-making dialogues to assure a comprehensive understanding of challenges and a multilateral approach to addressing them.

[1] From: http://www.asse.org/practicespecialties/bosc/docs/F2_Huangetal_0409.pdf

[2] American Society of Safety Engineers (ASSE). (2002).The return on investment in safety, health and environmental management programs [White paper]. Des Plaines, IL: Author. Retrieved Feb. 25, 2009, from http://www.asse.org/practicespecialties/bosc/bosc_article_6.php

[3] OSHA. (2007). Safety and Health Management Systems eTool: Module 1-Safety and Health Payoffs, Helpful Statistics. Washington, DC: U.S. Department of Labor, Author. Retrieved from http://www.osha.gov/SLTC/etools/safetyhealth/helpfulstatistics.html

Promotion

This component focuses on training, communication, and recognition for successes, awards, engagement, alignment, and other actions to create a positive safety culture. The command must engage with all hands to establish a clear safety message with achievable goals to create a positive command climate. These actions begin with the free flow of safety information and hazard reporting at all levels of the unit, and recognition for commitment to safety awareness and mishap prevention. Promotion is directly linked to the success of all the other SMS components.

Aviation safety training courses have clearly contributed to the mishap prevention and response capabilities of our command cadre and safety officer communities. Although we had some quota reductions in FY14, we are doubling our efforts to ensure that we target the most appropriate recipients (command and safety personnel) and deliver the best training available. Given the budgetary restrictions that we now face, we strongly recommend that personnel offered one of the following courses seize the opportunities while they remain.

Aviation Safety Training Courses

LT Jim Bates remains our stalwart ambassador at the Naval Safety Center, NAS Pensacola, delivering top quality tailored CG aviation safety training for each year's cohort of COs (Aviation Safety Command – ASO) and FSOs (Aviation Safety Officer – ASO). Quotas are sometimes available for prospective XOs, Ops Officers and EOs. This transfer season, we are making a push for timely ASO course completion to allow new FSOs to hit the ground running as early as possible after their assignment notifications. We appreciate command flexibility to support this effort. A complete list of FORCECOM coded courses is provided in *Table 10: Safety Training Courses*.

Table 10: Safety Training Courses

Course Code	Course Title
340222	Crew Resource Management
340224	Gas Turbine Investigation
341220	Aircraft Accident Investigation
341221	Crew Resource Management Instructor
341226	Aviation Human Factors
341227	Aviation Safety Officer
341228	Aviation Safety Command
500609	FSO / GSO Standardization Course
500825	Safety Management Systems
501801	Maintenance Resource Management Facilitator

FSO / GSO Standardization Course

This year's FSO Standardization Course is scheduled for the week of May 5-9. The training will take place in Washington, DC at the new Douglas A. Munro Headquarters Building. More details to follow.

Maintenance Resource Management 2.0

Since 2009, maintenance errors have contributed to 23% of all CG aviation mishaps, and have cost us over $8M and 62 injured personnel. In FY13, the frequency (130 mishaps), property damage ($1.7M), and number of injuries (18) in reported maintenance mishaps hit four-year high marks. Although none of these mishaps was singularly catastrophic, aviation leadership is aligned that this trend must be reversed. Initial mishap analyses have not identified a predominant contributing factor or clear trend. These events are distributed across all airframes and all phases of maintenance. Nonetheless, leadership agrees that mishap reports are only one indicator for identifying areas for improvement. There are other indicators and tangible ways to improve to leverage best business practices to improve the working environment. Accordingly, CG-41 and CG-1131 chartered a working group named MRM 2.0 to analyze the problem, benchmark industry practices, and make recommendations to benefit the aviation maintenance system.

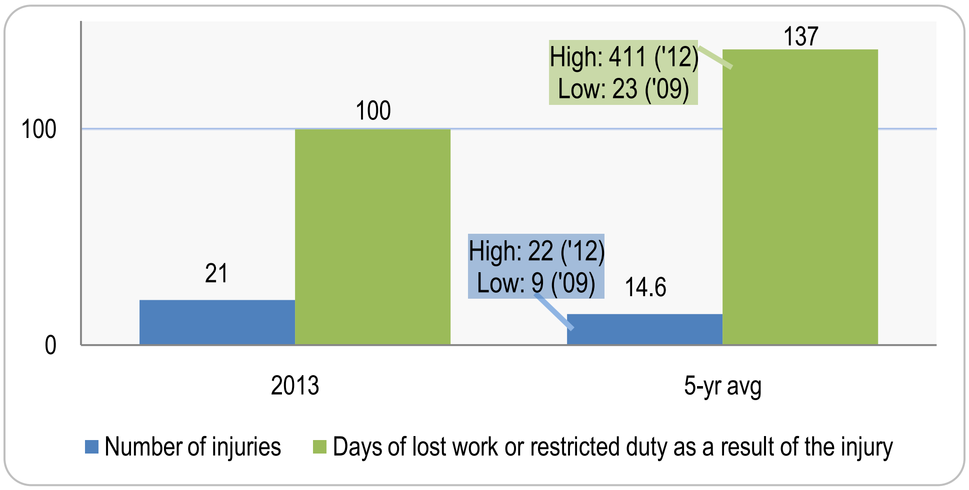


Figure 28: Number of maintenance-related injuries and consequences

The figure above illustrates the number of maintenance related injuries this past year compared to a five-year average.

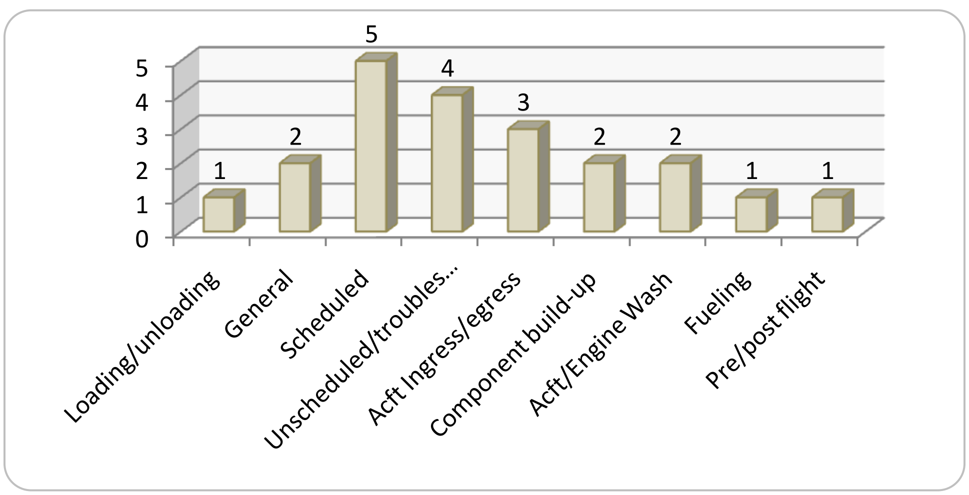


Figure 29: Aviation Ground Mishaps

The MRM 2.0 initiative focuses on the entire maintenance system, not just legacy MRM training. MRM training, the CG's program of record to reduce the human contribution to maintenance related mishaps, will be just one facet of this effort. MRM 2.0 will build on the premise of creating a maintenance system that fosters an environment that develops and sustains each maintenance technicians' proficiency by providing them with the proper training, equipment, documentation, and processes to successfully perform their duties.

Crew Resource Management

CRM refers to the effective use of all available resources – human resources, hardware, and information – with the goal of optimizing human performance and reducing human error in the aviation environment. CG-1131 remains committed to keeping CRM training curricula (initial and recurrent) relevant and inclusive. In this effort, ATC Mobile continues to develop an effective product for the fleet to learn from each year. Initial CRM training is provided to pilots at their aircraft transition (T) courses and to aircrew members at A-school training at Aviation Technical Training Center (ATTC) in Elizabeth City, NC.

Refresher CRM training is provided at all CG Air Stations. CRM refresher training provided by unit FSOs or ATC Standardization Team members (during a STAN visit) is the only training that meets the annual (15-month, day-to-day) CRM requirement. The CRM refresher training theme for CY2014 is Error Producing Conditions (EPCs). EPCs are a list of preconditions and situations which, based on scientific evidence quantifying their effect on human performance, tend to precede the occurrence of crew errors (i.e., slips, lapses, mistakes, and violations).

A third variety of CRM training is the *CRM Leadership* discussion at ATC Mobile. The theme for this training in 2014 is EPCs as they relate to automation management. Although this class does not meet a specific COMDT-mandated requirement, the course is designed specifically for pilots and is modeled to augment the CRM refresher by generating in-depth discussion of human factor issues.

Laser Safety Update

Overview

> We had 44 laser exposure events last year, an increase of 26% with 98% of the laser strikes coming from green lasers.

Since June 2007, there have been nearly 150 documented incidents of external persons aiming lasers at in-flight CG aircraft. While no crewmembers were permanently injured as a result of these attacks, some encountered temporary injuries (e.g., flash blindness, after image, headaches) that did require medical treatment. In FY13, the CG experienced 44 lasing incidences to aviation assets, a 26% increase over the previous FY (35 events). Nearly every strike (98%) originated from green lasers (532 nm wavelength), with most occurring during the early evening hours of 1900 -2100 local (73%). This past year, Air Station Borinquen and ATC Mobile reported the most laser strikes with eight and six strikes respectively. January was the highest month of reported strikes with eight reported events, though three of these occurred during consecutive nights to crews conducting New Orleans Super Bowl PWCS patrols.

Figure 30: Laser Exposure Events by Aviation Unit (FY 2004-2013)

Reported laser events and locations over the past ten years are illustrated in *Figure 30: Laser Exposure Events by Aviation Unit (FY* 2004-2013). Atlantic City aircrews experienced 25 out of a reported 129 laser events during the preceding ten years, more than double that of Borinquen with 12 incidents in the same period. Eight of the 25 Atlantic City laser events were reported by H-65 aircrews supporting the National Capital Region Air Defense mission.

Yearly laser exposure trends are depicted in *Figure 31: Laser Exposure Events by Year (FY 2004-2013)*. Monthly laser exposure trends are depicted in *Figure 32: Laser Exposure Events by Month (FY 2004-2013)*. It is clear that August remains the most active month, with 23 (18%) of the reported events.

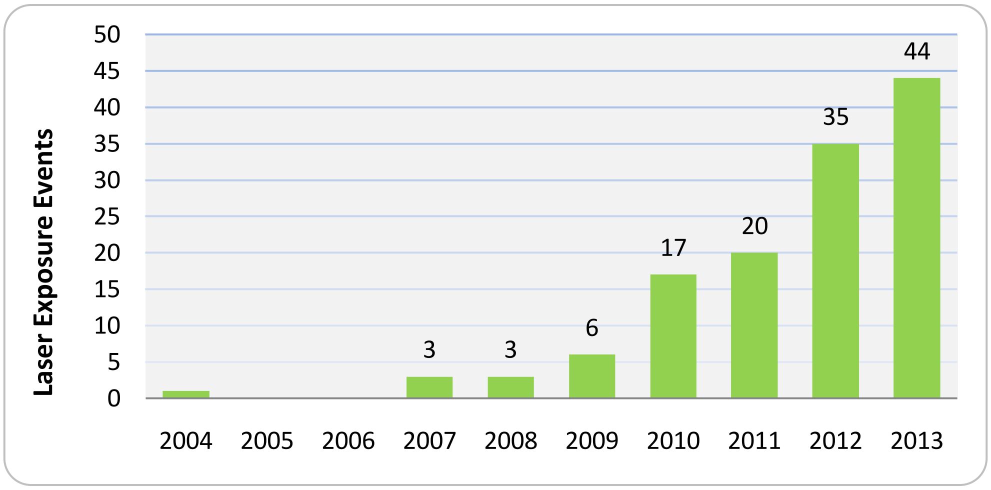


Figure 31: Laser Exposure Events by Year (FY 2004-2013)

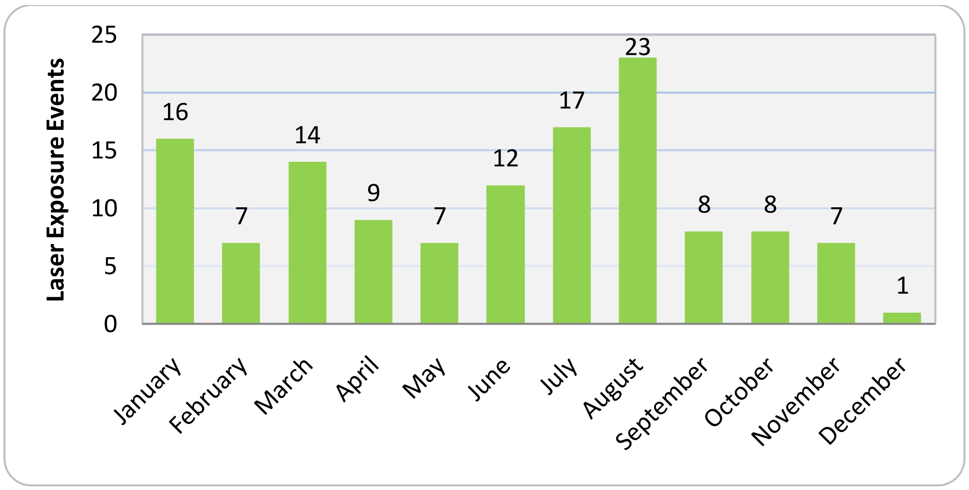


Figure 32: Laser Exposure Events by Month (FY 2004-2013)

Laser Law Update

In February 2012, Congress passed Section 311 of the *FAA Modernization and Reform Act, Prohibition against Aiming a Laser Pointer at an Aircraft*. The present law makes it a federal offense to aim the beam of a laser pointer at an aircraft, with an exception allowing the use of a laser emergency signaling device to signal distress. The CG's Office of Safety and Environmental Health (CG-113), Office of Aviation Forces (CG-711), Office of Congressional Affairs (CG-0921), and Office of the Judge Advocate General (CG-094) collaborated to recommend that Congress redact this exemption due to the conflict of interest that this law poses to rescue crews. This redaction was written into a draft bill of the *Coast Guard Quality of Life Act* dated November 2013 and briefed to congress in December 2013. CG-1131 will follow the progress of this bill and provide relevant updates as they are published.

Bird / Wildlife Aircraft Strike Hazard

In FY13, the CG reported twelve Bird and Wildlife Aircraft Strike Hazard (BASH) events. The data in *Table 11: BASH Event Descriptions (FY 2013)* summarizes FY 13 reported events. The data in *Figure 33: BASH Events (FY 2009-2013)* summarizes BASH events reported during the past five years.

Table 11: BASH Event Descriptions (FY 2013)

Date	Aircraft	Description	Class	Cost
10/2/2012	C-130H	Radome Damage	D	1,395.53
12/20/2012	C-130H	No Damage, Prop	D	108.00
1/9/2013	HU-25	No Damage, Gear (Deer)	D	45.00
2/7/2013	H-65	No Damage	D	72.00
2/27/2013	H-65	Airframe, Multiple Strikes to windscreens	C	61,437.21
5/1/2013	H-65	No Damage	D	18.00
5/6/2013	C-130H	No Damage	D	-
5/12/2013	H-60	No Damage	D	144.00
7/20/2013	H-65	No Damage	D	36.00
8/1/2013	H-65	No Damage	D	72.00
8/21/2013	C-130H	Airframe, Window	D	3,159.40
9/23/2013	H-60	Engine	E	678,080.00
		Total Events and Costs	12	744,567.14

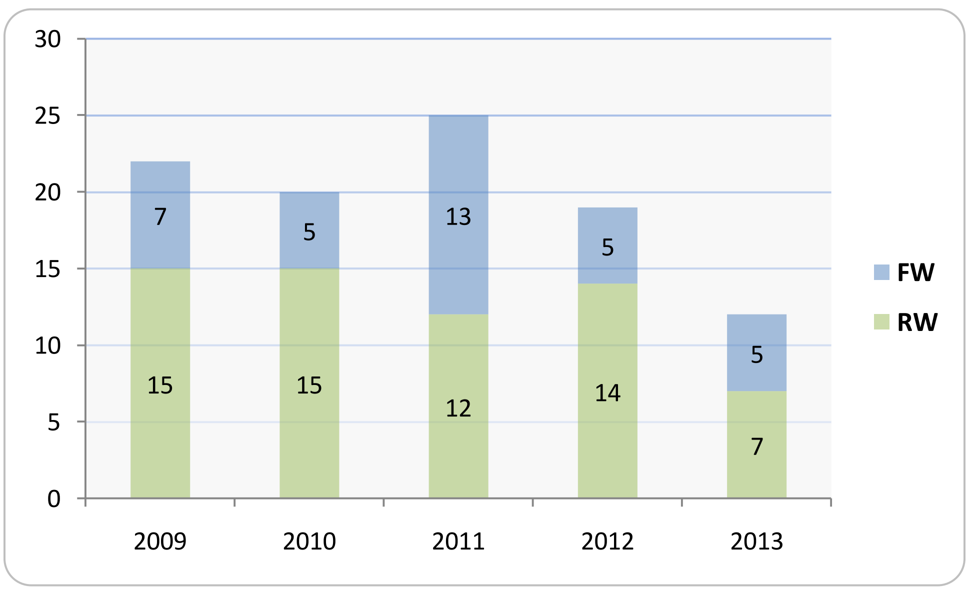


Figure 33: BASH Events (FY 2009-2013)

Aeromedical Factors – 5 year summary

Aeromedical factors are specifically mentioned in 2-3% of all CG mishaps (all classes) since 2009, with fatigue and spatial disorientation (e.g., vestibular/visual illusions) being the most commonly reported "factors" in this group. The Safety and Environmental Health Manual (p.3-6) requires mishap reports for "human factor" events in which a physiological condition "results in interference with a crewmember's duties." The paragraph goes on to describe interference as including "flight delays, diverts, or aborts." What is not required to be reported is aeromedical factors events not resulting in interference, but still occurring in flight and posing some degree of risk to safe operations. These types of events are known as "near misses" because they do not result in mishaps.

Unfortunately, we miss many learning opportunities when aeromedical factor events not resulting in mishaps go unreported. Further, we lose the opportunity to advocate for improved training when we don't provide data that these events occur. Organizational challenges to simplify reporting and analysis at field units have obstructed learning and deeper understanding of the frequency and nature of aeromedical events. A discussion of why and how reporting of these events should occur, specifically addressing spatial disorientation, follows. A depiction of related mishap events is illustrated in *Figure 34: Summary of Reported Aeromedical Event Mishaps FY 2009-2013*.

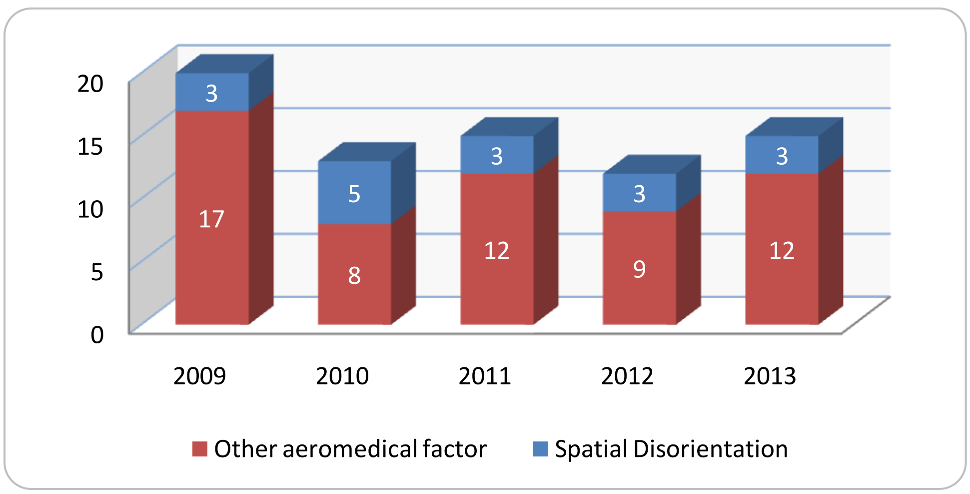


Figure 34: Summary of Reported Aeromedical Event Mishaps FY 2009-2013[4]

Why to Report

Spatial disorientation (SD) accidents tend to be fatal. SD is overrepresented as a factor in accident statistics, meaning they contribute to 25-33% of all accidents (includes GA and DoD data), and 90-100% of these accidents prove fatal. Pilots and leaders may be numb to SD or think SD is only a minor threat. Studies show that pilots overestimate their ability to prevent, recognize, and recover from SD, which can result in under-reporting. Riding out an episode of SD and not reporting it may also contribute to the development of complacency regarding SD risk. Additionally, perceptions of SD by aviators as a personal weakness contribute to under-reporting and diminish the ability to both mitigate risk and adequately design countermeasures. Studies have shown that visual and vestibular illusion factors are

[4] Aeromedical events are defined as flight/flight-related mishaps containing physiological, perceptual, and/or self-imposed stress factors assigned as HFACS codes.

commonly underreported in mishaps (ASEM, July 2011). One reason is that an operational definition of SD has not been clearly defined. While most think of spatial disorientation in the classic sense of experiencing vertigo, a modern definition is more multisensory, including both vision and vestibular events, given the importance of the interplay between the systems in maintaining pilots' orientation.

Considering that the CG routinely operates aircraft at low level in challenging environmental conditions with a limited horizon over featureless terrain, SD is a real threat. CG training is not sharply focused on educating and demonstrating countermeasures to aviators to protect against this threat. Incorporation of SD-inducing scenarios in aircraft simulator training (beyond just unusual attitude recovery) and augmentation of land-training with “spin chairs” to demonstrate principles of SD would greatly increase familiarity of aviators with the physiologic challenge of overcoming SD. Recent improvements to CG IIMC procedures and the night procedures CBT training is a good start to protect against SD events.

How to Report

Given the perishable nature of an experience with SD, it is valuable to have pilots describe their SD experience with as much detail as possible - what the conditions were like prior to the encounter, what they felt, how they reacted, etc. Safety Officers and unit mishap boards investigating/analyzing these events should enlist the assistance of their flight surgeons. Choose causal/contributing factors like "perception" when analyzing these potential mishaps, and be explicit in using terms like "sensation", "spatial disorientation" so data can later be mined. If using the Human Factors Classification System (HFACS), there are opportunities to include SD-related factors in mishaps by using the PC 500 “Perceptual Factors” series, but don't be bound to these codes or other predetermined classifications to do the explaining, use as much detail as possible in the analysis. To increase reporting and enhance awareness of SD events, reporting of any SD event in the aircraft as a Class D mishap will bring SD out of the shadows to better gauge the frequency of this event even when it does not result in a mishap or interfere with mission completion.

Understandably, reporting these and other human factors mishaps is inherently difficult because these events are much harder to quantify than a broken aircraft part. Also, stigma has traditionally been associated with these events. Still, open and honest discourse as professionals in discussing these events remains critical, in order to learn collectively as an organization and protect crews from this insidious threat.

CAPT J. Salvon-Harman, MD, and LCDR B. Potter

Hazard Reporting

Data analysts from the Naval Safety Center (NSC) helped LT Jim Bates compile some interesting statistics regarding our reporting culture. Here is a summary of what he discovered:

> *If you believe one measure of a healthy reporting culture is the number of Class D mishaps (what the USN/USMC call HAZREPs) that get reported, then the information shown below in Table 12: Class D / HAZREP Reporting Comparison might be interesting to you. Many times, Class D mishaps foreshadow what's possible in a future Class C, B, or A mishap, but one or more factors prevented them from being elevated to a higher level. They are the low-cost/no-cost lessons learned. They are also the events most easily ignored, and sometimes not reported, because of their lower visibility.*
>
> *Perhaps the CG's historically best in class Class A mishap rate is due in part to our comparatively high reporting of Class Ds. While many agree that the CG's reporting culture has much room for improvement, our Class D reporting ratio appears much*

higher than our sister maritime services. This will be a key metric to emphasize with USN, USMC, and USCG pre-command personnel attending Aviation Safety Command School at the NSC. I hope to challenge and motivate them with this information in the coming months.

LT Bates selected three service-specific differentiators for consideration in his analysis: 1) Reports per 100K flight hours; 2) Reports per aircraft in inventory; or 3) Reports per squadron/Airsta.

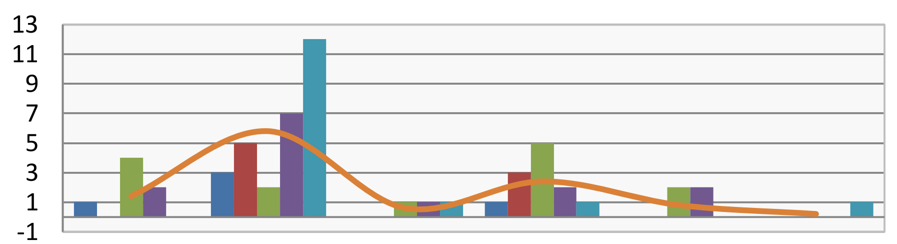
Table 12: Class D / HAZREP Reporting Comparison

	USCG	USMC	USN
USCG Class D Reports / USN & USMC HAZREPS	**472**	**282**	**2261**
Reports per 100K Flight Hours	436	272	113
Reports per Aircraft in Inventory	2.2	0.2	0.6
Reports per Air Station / Squadron	17.4	3.6	12.2

The strength of our Class D reporting in FY13 was done with your muscle, and it's something to be proud of. You taught your people about reporting requirements, kept your ears and eyes open, provided sound analysis, and shared reports that you could have just as easily blown off without anyone knowing. Keep up the great work!

Near Midair Reporting

The following chart and data table summarize the last five years of reported midair and Near Midair Collisions (NMAC).



	H60	H65	HU25	C130	C144	AUX
2009	1	3	0	1	0	0
2010	0	5	0	3	0	0
2011	4	2	1	5	2	0
2012	2	7	1	2	2	0
2013	0	12	1	1	0	1
5-Yr Avg	1.4	5.8	0.6	2.4	0.8	0.2

Figure 35: Reported NMAC FY 2009-2013[5]

[5] FY 2010 also includes midair collision of HC-130H CGNR 1705.

Safety Survey

Over 3,000 aviation personnel participated in the annual safety survey between November 2012 and March 2013. Perceptions were generally more positive than the previous year. Other trends we see each year: Officers rated survey items more favorably than enlisted respondents; rotary wing communities rate their flight related training and CRM aspects of flight duties more favorably than fixed wing communities; and MH-65 and HC-144 communities rate their aircrafts' capabilities the lowest.

The safety survey provides a telling indicator of our fleet's current perception of our aviation safety posture and reporting culture. The figures below summarize our current fleet's perception of CG aviation safety.

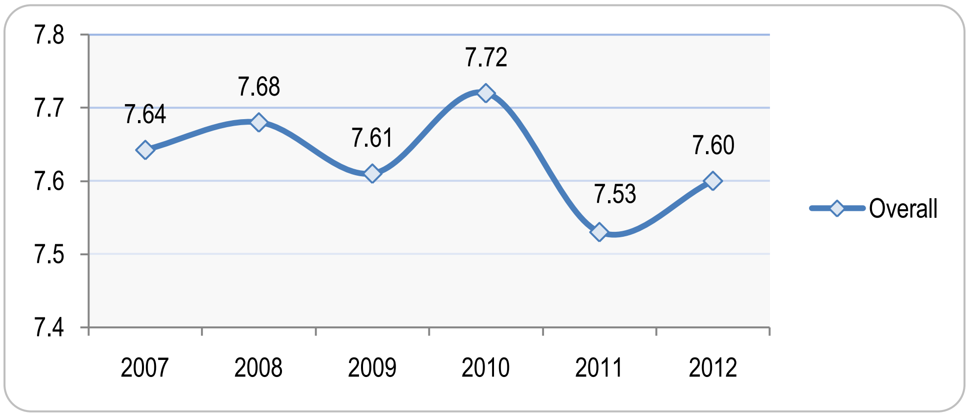


Figure 36: Responses to "Rate the safety posture of your unit."

Scale: From 1 (disastrous) to 10 (completely safe)

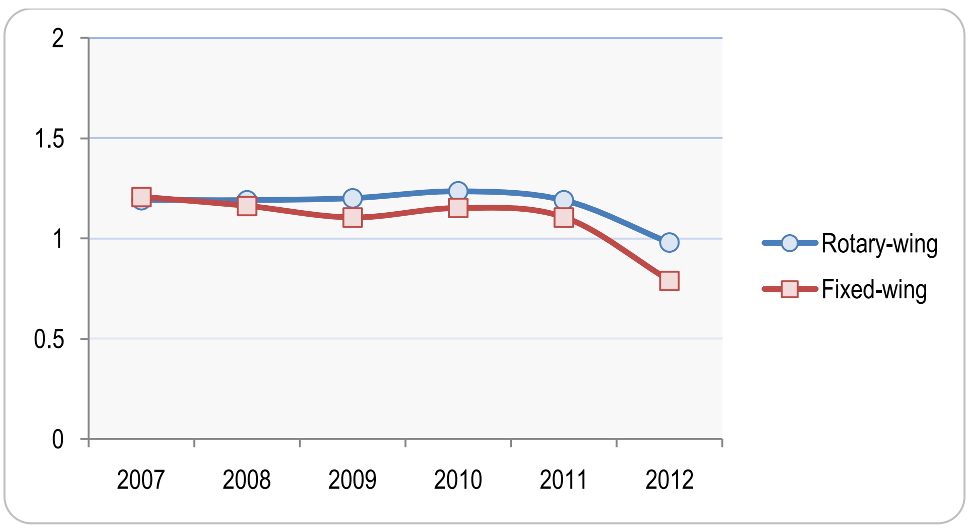


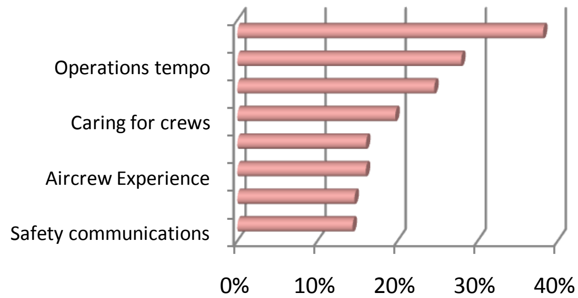
Figure 37: Responses to "I am able to report hazards or unsafe practices without fear of adverse consequences."

Scale: 0.0 = neutral, 1.0 = agree, 2.0 = strongly agree

We selected two additional survey questions and responses to shed light on our fleet's perception of CG safety posture and reporting culture. The answers are presented below in rank order and include a description of relative change from last year.

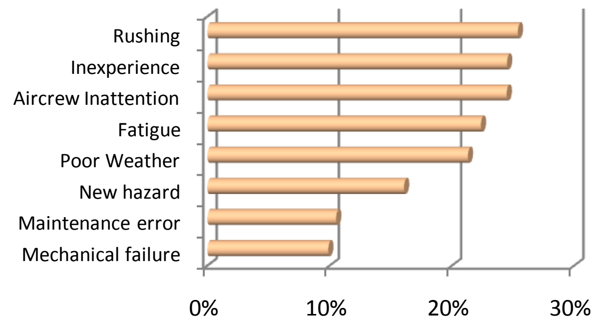
- **If you were the CO, what safety issues would you immediately address?**

1. Personnel shortages: 1250 *(no change)*
2. Operations tempo: 915 *(no change)*
3. Aircrew training: 805 (*no change)*
4. Caring for crews: 646 ***(new in 2012)***
5. Mishap preparedness: 526 ***(new in 2012)***



- **In your opinion, what will be some causal factors leading to the CG's next serious on-duty aviation mishap?**

1. Rushing: 832 ***(↑3rd)***
2. Inexperience: 803 ***(↓1st)***
3. Aircrew inattention: 802 ***(↑4th)***
4. Fatigue: 733 ***(↓2nd)***
5. Poor weather: 698 *(no change)*



Each year, the survey design team uses the previous year's feedback to improve the survey, removing questions that provide ambiguous results, but keeping the overall changes to a minimum to ensure that effective questions are kept consistent to allow for trend analysis. Feedback via email is always welcome: lst-CG-1131@comdt.uscg.mil.

Aviation Safety Graduate School Update

Graduate School Completion

We extend our early congratulations to our current grad school students LCDR Pete Evonuk, LCDR Dan Lanigan, and LCDR Chris Wright. This class of graduate school students is slated to complete their studies at Embry-Riddle Aeronautical University (ERAU) this year and immediately put their newly acquired skills to work in support of CG aviation safety initiatives. Potential assignments for graduates include CG-1131, ALC, ATC, the Navy's School of Aviation Safety, or the C-27J APO.

Graduate School Selectee

Funding reductions limited our selection for Aviation Safety graduate school to one for FY14. We wish to congratulate LCDR Vince Jansen for his selection among this past year's competitive pool of candidates. He is planning to complete his studies at ERAU and prepare for follow-on assignment in FY16.

Aviation Safety Division (CG-1131)

FY13 Transfers

This year, we welcomed two new members to our staff. LCDR Frank Flood arrived with experience flying the CG's HU-25, H-60, and DoD aircraft. Mr. Chris Hill also joined the team this year, with experience flying the CG's HH-65, MH-68, and DoD aircraft.

Scheduled FY14 Transfers

CAPT Morrison will continue supporting the Health, Safety and Work Life Directorate and RADM Dollymore (CG-11) as he assumes the deputy duty role (CG-11d). CDR Chris Chase will complete his XO tour at Air Station Traverse City and is slated to assume the CG-1131 Division Chief role this summer. We wish LCDR Shana Donaldson all the best as she completes service to CG-1131 and returns to the operational MH-65 fleet. In addition, we anticipate LCDR Chris Wright coming aboard this summer.

Division Chief

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New Headquarters Address

We are now located on Lower Level 9 at the Douglas A. Munro Coast Guard Headquarters Building on the St. Elizabeth's campus. If you are planning to visit HQ, be sure to first review important visitor information by clicking here. If you plan to mail anything to CG-1131, please use the address below (including capitalization) to ensure prompt delivery.

COMMANDANT (CG-1131)
AVIATION SAFETY DIVISION
US COAST GUARD STOP 7907
2703 MARTIN LUTHER KING JR AVE SE
WASHINGTON DC 20593-7907

2013 Aviation Flight Safety Officer's Flight Plan

The Aviation Flight Safety Officers are committed to improve and support aviation unit readiness by conserving human resources, equipment, and other assets through analysis of aviation hazards and mishaps. We embody our service's core values and are guided by our program's motto, Salus et Ducendi, ~ Safety and Leadership. We remain steadfast in our resolve to advance a *proactive* vs. reactive Coast Guard Aviation Safety Program.

Rotary wing – Training and proficiency issues are a concern in these communities given the recent surge of policy and TTP changes (Air Ops, flight manual, TFWG, etc.) and the additional workload this places on maintaining basic proficiency during a period of flight hour reductions. Both communities believe that standardized fleet IP development should be a top training priority, and are eager to see results from the upcoming CG-711-sponsored front-end analysis of instructor pilot training. The H-65 community expresses primary concerns regarding their equipment: installing compatible aircraft NVG/night lighting, improving the form, fit, and function (F3) hazards associated with the current survival vest and the HGU-56 helmet, and expanding of HUD capability are top priorities. In the H-60 community, understanding the effects of the automation learning curve and resulting increased 'heads down' time should remain a priority among program leaders. The community feels that while the "automation management" theme of CRM this past year was a good start, more training emphasis on platform-specific automation is warranted. The prominent H-60 equipment issue is finding a solution to the ergonomic deficiencies associated with the HGU-56 helmet. Recent progress at ALSE tech services to develop a low-profile SAR Warrior vest to mitigate this issue in both rotary-wing communities is encouraging.

Fixed wing – Issues in the HC-130H fleet include lack of NVG for aircrews, parts availability, and a lack of certified equipment to navigate using GPS-augmented systems. Neither HC-130 community receives formal training on foreign airspace protocols, nor do they receive CRM leadership training (conducted at ATC Mobile for other airframes). The top safety issue in the HC-144 fleet is the lack of a simulator. This hinders safe and effective training/practicing ditching and stall recovery procedures and only exacerbates the effects of pilots' overall inexperience with a new airframe. Other HC-144 issues include: developing formal icing procedures, building proficiency with flight deck automation, and preventing maintenance errors as the community adjusts to new procedure cards. Discussions with CG-41, CG-711, FORCECOM, and CG-931 confirm leadership alignment on these concerns and keep us optimistic for continued advancement on the equipment and training fronts.

Future Waypoints – Items identified at the course for further investigation/research include: the USAF/USN Aviation Safety Action Program (ASAP) programs, Military Flight Operations Quality Assurance (MFOQA), extending safety privilege to unit Class C/D mishap investigations, the addition of a disclaimer to post-mishap admin and safety reports to clarify intent, and evaluate the pros/ cons of developing a more robust safety career track modeled to Aviation Engineering. On request, CG-1131 can provide program updates on any of these items.

Conclusion – Thanks to our leadership for their support of an outstanding 2013 Flight Safety Officer's Standardization Course. The event was a success in the exchange of ideas, shared best practices, and lessons learned amongst participants. Survey comments appreciated Tripartite/Commandant's Safety Board participation in an open panel discussion and provided *"vectors direct"* to be effective and successful unit leaders.

LCDR A. S. Alongi
Senior F/W FSO
Air Station Barbers Point

LCDR C. E. J. Pittman
Senior R/W FSO
Sector San Diego

CAPT M. A. Morrison
Chief, Aviation Safety
COMDT (CG-1131)

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Coast Guard Aviation Safety Mission, Vision and Goals

Our Mission

Support safe and effective Coast Guard operations

Our Vision

Establish and promote a proactive safety culture through leadership, advocacy, processes and analytics

Goals to Achieve our Vision

- **Provide expertise to support safe and efficient CG operations**
  Provide ongoing safety consulting and support to Coast Guard aviation internal and external stakeholders.
- **Manage and refine aviation safety processes**
  Seek continuous improvement of safety policy and programs focused on development of processes and systems that enhance mission effectiveness through timely delivery of relevant, valuable and accurate safety information.
- **Provide tools that enable superior safety analytics**
  Provide proficient personnel equipped with the tools needed to promptly and accurately analyze potential hazards and mishap events, identify trends, and propose solutions that enhance safety and occupational health and increase operational effectiveness.
- **Develop and sustain a professional CG FSO community**
  Oversee the recruitment, selection, development and sustainment of high performing FSOs, providing the background, training, resources and credibility for a growing world-class Coast Guard aviation safety program.